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THE RAILWAY GAZETTE

33, TOTHILL STREET, WESTMINSTER, S.W.1

Sir Stafford Cripps, Minister for Economic Affairs

THE first of the expected Government changes was announced last Tuesday. Sir Stafford Cripps, who has been President of the Board of Trade since the Socialist Government came into office in July, 1945, has become the first holder of the title of Minister of Economic Affairs. He will be a Minister without portfolio, in charge of the co-ordination of the economic departments, which include the Board of Trade, and the Ministries of Supply, Fuel & Power, Labour, and Transport. Previously, the domestic economic policy had been co-ordinated by a committee of Ministers, headed by the Lord President of the Council, and overseas economic policy by another committee, of which the Prime Minister was Chairman. These two committees are to be amalgamated. The new President of the Board of Trade is Mr. Harold Wilson, previously Secretary for Overseas Trade, who will have a seat in the Cabinet. A new ministerial committee on economic planning is being set up, and this will consist of the political heads of all the departments concerned with economic affairs—the Treasury, the Board of Trade, and the Ministries of Fuel & Power, Labour, and Transport. In view of the gravity of the present economic situation, the Prime Minister will preside over this committee. In his new capacity Sir Stafford Cripps will have wide powers in his task of co-ordinating the nation's drive for increased exports, and will give his undivided attention to economic problems, both at home and abroad. He will have the assistance of the Central Economic Planning Staff, the Economic Information Unit, and the Economic Section of the Cabinet Secretariat.

Date of Railway Transfer to State

On Friday of last week two London daily papers suggested that the Government might postpone taking over the railways for six to twelve months from January 1, the date of transfer fixed under the Transport Act. It was argued that in the first place the value of gilt-edged securities had dropped, which would involve payment of higher compensation to railway stockholders. Secondly, the export drive was making exceptional demands on the railways, and that they could not be transferred to Government ownership without a certain amount of interference to the present organisation. On Friday afternoon the report was denied. There is no lack of good reasons why the vesting date should be deferred, but the fall in the value of gilt-edged securities is not one of them. Under the terms of the Act railway stockholders' compensation is related to the level of gilt-edged securities on the date of transfer, and when the compensation clauses were debated, the level of gilt-edged suggested that the return to stockholders would be about 2½ per cent. The fall in the value of 2½ per cent. Consols suggests that stockholders may receive compensation at the rate of about 3 per cent. The suggestion that the Government should juggle with the vesting date so as to whittle down payment to stockholders, after arbitrarily fixing its own terms for compensation, has implications which are more unsavoury even than the original transaction. A more practical fear which might be entertained by stockholders is that strenuous efforts may be made towards the end of the year to raise the prices of gilt-edged securities.

Railway Executive's Task

The recently formed Railway Executive will have an extremely onerous task to settle, in the comparatively short time now available, the many problems which will face it in creating a new organisation to manage and operate the railways from January next. Its task would have been difficult enough had circumstances been normal, but the changes have to be carried out in the light of an unprecedented number of wagons under and awaiting repair, a shortage of something like 6,000 passenger coaches, with little hope of improving the position in the immediate future, the difficulty of securing adequate supplies of materials and the shortage of men in certain vital grades. Every railwayman is proud of the efficiency to which the railways had been brought when war broke out in 1939, and Sir Eustace Missenden, as Chairman of the Railway Executive, will have the good wishes of railway staff generally in his most difficult task.

Coal Transport Organisation

We understand that no indication has yet been given of the alterations which will be made as from January next, but we have no doubt the Railway Executive will have prominently in mind the necessity for refraining from making any changes which might affect adversely to the slightest degree the present railway organisation so far as it affects the transport of coal. It seems to us that with the present abnormal shortage of wagons and difficulties associated with the maintenance of locomotives, inferior quality of coal, the shortage of firemen, etc., the railway organisations will have a heavy task for several months ahead in meeting the requirements in this direction, particularly if by reason of working longer hours the production of coal substantially exceeds the present target. Apart from this, a multitude of matters of railway administration and operation, of varying importance, must be settled well before the end of the year, and having regard to the extent to which rail transport generally affects the national economy, "hasten slowly" would appear to be an appropriate slogan for the Railway Executive for the present.

Overseas Railway Traffic

Both the Argentine North Eastern and Entre Rios Railways are maintaining their lead over last year's aggregate results, the two companies' traffics having reached a total above that of 1945-46 in the week ended September 6. During the fortnight under review, however, the Argentine North Eastern experienced a decline of ps. 6,600 in the first week, but a subsequent recovery gave a net gain for the period of ps. 5,700. The Entre Rios Railways have improved their position by ps. 85,100 during the fortnight. Paraguay Central returns for the period ended September 12 were the first issued for seven weeks, advances in that period having been irregular on account of the revolution in the country, which had passed its most acute phase by August 19. The seven weeks to September 12 showed a decrease of G145,715, but the week to September 19 brought an advance of G34,015. Results of the principal Argentine Railways are shown below:—

	No. of week	Weekly traffic	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific*	12	2,600	+425	29,575	+4,287
Buenos Ayres Great Southern*	12	3,098	-204	39,586	+ 530
Buenos Ayres Western*	12	1,475	+262	16,335	+1,983
Central Argentine*	12	3,374	+200	38,799	+1,435
Canadian Pacific	37	1,601,750	+47,000	54,361,750	+4,249,000

* Traffic returns in thousands of pesos

The C.P.R. return for the 37th week is the last of the weekly series to be issued, the company having announced that in future only the monthly figures, showing also operating expenses and net receipts, will be published. It is considered that the gross figures alone give a misleading impression in these days of exceptional costs.

Operating Deficit Prospect in U.S.A.

On August 20 a statement was presented to the Interstate Commerce Commission by Mr. Walter S. Franklin, Vice-President in Charge of Traffic of the Pennsylvania Railroad, in connection with the railways' petition for an average increase in rates of 17 per cent. Since that date a wage increase of 15½ cents an hour granted to non-operating employees as from September 1, together with higher costs of materials, has changed the situation. Mr. Franklin submitted a revised statement on September 1, showing that at the present level of rates the Class 1 railways would have no net income at all in 1948. At a net deficit of \$168 million. For the Pennsylvania alone, he predicted a deficit in the current year of \$15,676,000 and for 1948 of \$95 million. He declared that operating costs of the railways in general had risen by over \$3,000,000,000 since 1939. The increase on the Pennsylvania alone had been \$331 million since 1940, but higher rates and fares had contributed only \$134 million in additional revenue. Mr. Franklin affirmed that the difference of \$197 million was incapable of absorption. The commission is being urged to act promptly in granting an emergency rate increase of 10 per cent. to meet

the higher wages of non-operating employees. It was emphasised in Mr. Franklin's statement that the chief officers of all railways have tried to keep the increase sought as low as possible.

Public Relations on Railways

Together with the physical properties of the railways, the Government will take over a fund of goodwill fostered over a long period by the public relations officers. Mr. George Dow, Press Relations Officer of the L.N.E.R., described the functioning of a public relations department in a paper read to the Stephenson Locomotive Society on September 29 (as reported elsewhere), and ended on a note of interrogation regarding the future organisation of such activities. It may be that the interpreters to the public of the nationalised railways will begin with a disadvantage, for the spokesmen of the unified system inevitably will be associated in many minds with the political doctrine that brought the unification about. While this may be a testimonial in some quarters, elsewhere it will be a barrier, causing the public relations officer to be regarded as an addition to the growing ranks of public apologists, so that when he foretells an improvement in suburban train services, prudent short-distance travellers will hasten to put their names down on the waiting list for a bicycle. Railways are essentially a British product; socialism is partly an import. A socialised railway system appears to many of those now most friendly to the railways as a hybrid oddity.

Permanent Way Precision

Pre-assembly of track components facilitates relaying to an extent that allows long and complicated sections of point-and-crossing work to be renewed during a comparatively short period of track occupation. If full advantage is to be taken of this improved method, great care must be exercised in the manufacture and assembly of the materials, so that the work of renewing the track may be carried through without a hitch. A recent visit by the Permanent Way Institution to the works of Taylor Bros. (Sandiacre) Ltd., afforded an opportunity for observing the methods adopted by this firm of track specialists to ensure first-class results. Absolute precision in manufacture, machining, and assembly characterises the work in all its stages, and no effort is spared to simplify the task of the railway engineers and their staffs. All crossing timbers and rails are marked and numbered to correspond with a detailed plan of the layout. As an additional guide, a series of wooden laths, forming a continuous strip throughout the assembly, is marked and numbered to show the exact position of every timber, and despatched with the material to the site. The use of these laths not only ensures that the timbers are laid out correctly, but relieves the engineers from anxiety in carrying out the exacting task of restoring normal working with the minimum of delay.

The "Enterprise" G.N.R. (I.)

The most noteworthy feature of the summer timetables of the Great Northern Railway (Ireland) was the introduction of a daily non-stop express, in each direction, between Dublin and Belfast. In the past, the journey has been made non-stop by special trains, but this is the first occasion that such a schedule has been adopted for a regular service; it is also the first daily non-stop run of more than 100 miles on an Irish railway. The express, named the "Enterprise," is allowed 2½ hr. for the 112½ miles between the two cities. The south-bound train leaves Belfast at 10.30 a.m., and the return service leaves Dublin at 5.30 p.m. The non-stop run eliminates the Customs examinations at Dundalk and Goragwood; these formalities are conducted before the departure of the trains, and on arrival at Dublin and Belfast. For this reason, passengers are requested to arrive at the station 30 min. before the train is due to leave. Accommodation is limited to 72 first class, and 200 third class passengers, and the standard formation is six coaches and a buffet car. The service was inaugurated on August 11, and has proved deservedly popular. The class "V" three-cylinder compound 4-4-0 engines have had no difficulty in observing the 50 m.p.h. schedule with the standard load of 207 tons, and the service has established an excellent record for punctuality.

Direct Steaming in Running Sheds

News of the running shed modernisation programme now being carried out by the New York Central Railroad includes an announcement of the rebuilding of the busy engine-house at Englewood (Chicago). The new shed is to make immediate use of the practice known as "direct steaming," the advantages of which are causing it to be adopted to a rapidly increasing extent. Under this system, a supply of steam is piped throughout the shed, serving all the pits. Locomotives which are brought to the shed after finishing a run are stopped on the ash-pits outside, where the fires are dropped; the remaining boiler pressure suffices to get them into the shed under their own power; subsequently, when it is time to prepare them for their next trip they are coupled to the steam lines in the sheds, and are charged with sufficient steam to enable them to move outside again, when lighting-up begins. The advantages of this system are the reduction of stresses in firebox plates and stays and the minimising of corrosive effects on the structural steelwork in the shed roof. In addition, the sheds thus become cleaner and better to work in. Sulphuric fumes or gases can work havoc in running shed structural steel and pipework, as every shed foreman knows; and the direct-steaming system certainly would appear to merit a trial in this country.

Conversion of Steam Locomotives to Oil Burning

The progress of conversion of steam locomotives to oil burning, which was commenced rather more than a year ago at the behest of the Minister of Transport, has been very slight. It will be recalled that Mr. Alfred Barnes asked the main-line railway companies to proceed as quickly as possible with the conversion of 1,217 locomotives, which, it was estimated, would give a saving of 20,000 tons a week, or 1,000,000 tons a year. The number of engines to be converted by the individual companies was:—G.W.R., 172; L.M.S.R., 485; L.N.E.R., 450; and Southern Railway, 110. Last week we were informed by the Ministry of Transport, in response to an inquiry as to what was the latest position, that by the end of August last, 49 locomotives had been converted, and it was not expected that further conversions would take place for some little time. Of these, 37 are G.W.R. locomotives, six L.M.S.R., five Southern Railway and one L.N.E.R. The bottleneck, it was stated, was to be found in the supply of equipment for storage installation. It seems unlikely, therefore, that the Minister's expectations of coal economy from this source will be realised during the coming winter, if indeed they ever are.

The Public Corporation

THE growth of the public corporation as a means of administering primary industries has received an impetus since the advent to power of the present Government. A fundamental change in the commercial and economic organisation of the nation is being effected by a process under which whole industries are being converted into single businesses functioning under statute as public corporations, and as primary industries and essential services such as coal, transport, and electricity are embraced, every member of the community is concerned. The constitution and function of the public corporation in these manifestations are by no means uniform.

Sir Arthur Street, who is Deputy-Chairman of the National Coal Board, and who, therefore, is intimately connected with one of the latest of this form of phoenix which has arisen from the ashes of a once economic industry, confessed in a recent address* to the Institute of Public Administration that, like the elephant, the public corporation is much easier to recognise than to define. He suggested that it might be described as "a financially autonomous non-profit-making body created by an Act of State to provide a monopoly of goods or services on a commercial basis, ultimately responsible through a Minister to Parliament and the public, but free from full and continuous Ministerial control."

Sir Arthur Street traced the rise to public trading from the establishment of the General Post Office over 300 years ago. The interwar developments included the Central Electricity Board, the British Broadcasting Corporation, the London Pas-

senger Transport Board, and the British Sugar Corporation. In the two years 1946 and 1947 no less than eight have arisen, or are in process of creation. These deal with the Bank of England, the coal industry, telecommunications, raw cotton, electricity, transport, and Colonial development, the last named of which is responsible for two, the Colonial Development Corporation and the corporation to take over the groundnut project recently founded in East Africa.

It was on this point in his address that Sir Arthur Street touched on matters which we feel call for comment. No doubt, his long tenure of office in the Civil Service, which he joined after the 1914-18 war, predisposes him to the view that there is greater merit in the virtues of the Service than will appeal to many who have not enjoyed that rarified atmosphere. He emphasised that to say that public corporations are more efficient than Government departments because they are not staffed by civil servants is a *non sequitur*. The point here, surely, is that the assessment of relative efficiency between Government departments and public corporations would be difficult, if only because their functions are, or should be, quite dissimilar. The duties of a Government department should be administrative, but the function of a public corporation increasingly is to take part in what should be commercial or trading activities. Perhaps it is a pity that Sir Arthur Street should ask rhetorically "is the General Post Office inefficient? And how many commercial organisations of comparable scale can aspire to the same efficiency?" He does not answer directly his own question, but there are many who would reply in a manner he apparently would not expect.

He tells us that civil servants are selected in their youth for their powers of thinking clearly, and the public corporations, to which are entrusted the fate of vital national industries, cannot afford to do without people who can think clearly, who can reach a dispassionate judgment on the facts, unwayed by emotion or prejudice—who, in short, are intellectually honest. His suggestion seems to be that clear thinking and intellectual honesty are a civil servant's prerogative.

More interesting, however, were the passages which presumably gave some indication as to his views of the conduct of the public corporation, and the lines that might be adopted in the future. Some of these points will be of considerable interest to personnel of industries, such as transport, which are in process of being absorbed into a public corporation. Sir Arthur Street, dealing with the matter of salary scales, said that where a man, by his efforts, can bring in large profits for the shareholders of his company, it is good business to pay him a large salary so as to retain his services. On the other hand, he argued, in a public corporation it was not possible to assess merit in relation to ability to earn profits. It could be assessed only in terms of public service. It seems to follow from this, that service in a public corporation will appeal less to the financially ambitious than will an industrial career, and to that extent that the public corporation will be the worse off.

Sir Arthur Street's proposal for dealing with salary matters is to recognise from the beginning that persons will be of more worth in the public service as they gain experience and to put them on incremental scales progressing to a maximum. Promotion to a higher grade with more responsibility and more pay would be the normal method of recognising ability and initiative. That he describes as the only fair system, and in so far as it cannot be applied immediately in a newly nationalised industry, he regards it as a matter for lament.

Sir Arthur Street does not contend that public boards and their senior staffs should be staffed by men with Whitehall experience only. His suggestion is that they must develop certain qualities which today are found in civil servants if they are effectively to discharge their public duties. They will not be regular civil servants, but will be part of a new industrial civil service. They will be distinguishable from the former in that they have not been recruited through the medium of the Civil Service Commission, and are not remunerated out of monies voted by Parliament. They must be good administrators; they must be devoted to the public interest; they must be impartial; they must be guided by broad considerations of rational policy; they must be imaginative; they must be capable of carrying responsibilities which are crushing in comparison with those normally to be met with in the commercial world; they must be capable of taking rapid and decisive action under conditions of external stress such as the double pressures

* The Public Corporation in British Experience. An address by Sir Arthur Street to the Institute of Public Administration at its Summer Conference at Ashridge, June 26-30, 1947

exerted on Government departments by Parliament and the Cabinet. With the first four of the qualities that Sir Arthur Street sets out there will be no quibble as to their application to the British Civil Service, which beyond dispute has a reputation and tradition on a level not exceeded elsewhere. The last three of them, and particularly the last, are not usually so closely allied with the Civil Service in the minds of the public and industry as Sir Arthur Street appears to imagine.

He continues by expressing the view that if the change from direct Governmental operation to operation by a public corporation means taking an industry out of the hands of the Civil Service, it also means putting it into the hands of a new civil service—and more firmly, for whereas in a Governmental department the Minister ultimately is responsible for everything that happens, the public corporation would be subject only to overhead ministerial directions on questions of national policy.

If public boards are to cohere as units of management, Sir Arthur Street thinks that their membership should not be representative of sectional interests, and that other administrative machinery must be constructed for the protection of consumers' and workers' interests. He also discusses whether a public board should consist of part-time members chosen, not for their specialist knowledge, but for their general business experience and administrative ability, with perhaps a full-time Chairman and Deputy-Chairman; or of specialist members serving full-time in charge of departments. In his view the scale of operations is one of the deciding factors, and he believes that in a large-scale organisation some sort of functional set-up is almost inevitable. The heads of the functional departments can report through the General Manager to a part-time non-specialist board, or else the heads of the functional departments themselves can be members of the board. In the former alternative, the General Manager is required to be a superman, and these are few and far between. For large-scale organisations he favours functional boards that enable those at the top, who are responsible for decision, to breathe freely; against them it is held that they tend to bring too much to the top for decision at board level.

Sir Arthur Street makes some brief comments on the British Transport Commission, which he describes as charged with the duty of co-ordination and a general policy control, together with Executives appointed by the Minister responsible for executing policy in particular transport fields. He compares that position with the organisation set up in the coal industry, where the National Coal Board has eight divisional boards in the coalfields with delegated authority for managing the industry within their territories, subject only to co-ordination and overhead guidance from headquarters. He suggests that the position under the Transport Act probably springs from a desire to crystallise in legislative form the need for the greatest devolution of authority from the centre so as to encourage initiative, and, as far as possible, competition, and he argues that it would undoubtedly be in a better position to resist centripetal pulls. On the other hand, he raises the question as to whether the Transport Commission will be able to discharge its responsibilities effectively if control of the parts becomes too weak, as it will have no power to appoint or dismiss members of its subordinate Executives. In practice, he suggests that what would happen, should the occasion arise, would be that the Transport Commission would advise the Minister that one of the Executive was not carrying out its policy, and that the membership should be changed.

Robert Holland-Martin

OUR issue of February 4, 1944, contained a biography of Robert Holland-Martin, who had died on January 27 of that year, and an appreciation of his services as Chairman of the Southern Railway. In an accompanying editorial note we said that his "kindliness, good temper and charm of manner were in accord with what has become almost a tradition among the Chairmen of the four main-line railway companies." These qualities, and the genius for friendship which went with them, form the keynote of a delightful little book edited by Eleanor Adlard.* The book is a collection of articles by members of

the family and old friends on various aspects of Holland-Martin's activities.

Two beautifully written chapters describe his life in town and as a country squire in the Cotswold country. Other contributions deal with his interest in antiquarian research, in architecture, in travel, in the Territorial Force and in the Fishmongers' Company. "At the Sign of the Grasshopper" is the title attached to an account by Lt.-Colonel R. V. Buxton of the 40 years Holland-Martin spent as a banker in Lombard Street. Appropriately, the subject of his railway work is handled by Colonel Eric Gore Browne, who writes with enthusiasm about his efforts to foster a team spirit among the 60,000 members of the Southern Railway staff. We are glad that the editor also has reproduced the fine tribute to "R.H.M." which appeared in the *Southern Railway Magazine* for March-April, 1944.

The book is well printed and has a number of pleasing illustrations. The colours on its distinctive jacket are the red and green of the family, and their coat-of-arms, surmounted by the Martin Cat, is the centrepiece of the design. The preface states that royalties from the sale of the book "are to be given to the last of R.H.M.'s many schemes for the betterment of his beloved countryside—that of the clearance of unworthy buildings round Tewkesbury Abbey, so that this great church can be seen in all its Norman glory."

Important American Signalling Order

CONSIDERABLE prominence has been given in the American railway Press to an order issued by the Interstate Commerce Commission on June 17, 1947, requiring the railways of the United States to instal a large amount of new signalling equipment during the next five years or so, on routes where, after a lengthy investigation into the matter, the Commission considers that the nature of the traffic calls for additional protection. The order requires the railways to instal some form of block signalling—in other words, to adopt the space interval principle—on all lines where freight trains are operated at 50 m.p.h. or over and passenger trains at 60 m.p.h. or over. On lines where any train is operated at 80 m.p.h. or more an automatic train stop or train control, or automatic continuously controlled cab signal system must be applied, to act in conjunction with whatever form of block signalling may be in operation, or be installed, under the order. This order is one of the most far-reaching ever issued by the Commission on the subject of railway working. A time limit of 60 days was given to the managements concerned in which to raise objections and request any relaxation of these comprehensive requirements.

There is some difficulty in harmonising the various figures that have appeared in the Press in connection with the order, but it is evident that at the lowest estimate a very great mileage of route is affected. On at least 17,470 miles of track, for example, where the speeds mentioned are run, there is at present no block signal system of any kind in use, traffic being operated under the ordinary "Standard Code" rules by train dispatchers, on the basis of the time table, modified by train orders, and the observance of certain rules governing the protection of standing or delayed trains by train crews. It is true that the new requirements could be met in theory by installing some fairly simple system of manual block.

Conditions in America, however, are very much less favourable to manually-operated signalling of any kind than they are in Great Britain where the space interval principle has been applied on all passenger lines for nearly 60 years. About 4,900 miles of track, carrying trains running at the speeds involved in the order, at present are being operated by some form of manual block, but it appears that the rules now prescribed for such methods of working are in some respects very different from those already in force on these lines, and it is doubtful whether manual working can be retained, if the order is to be complied with.

On single-track lines, of which there is a very large proportion, there is no electric token working as met with here, and security rests on properly exchanging and recording telegraph or telephone messages and working in most cases some comparatively simple form of fixed signal at stations. It has been the custom on many lines to allow trains to meet and cross at unattended passing loops, or "blind sidings," between

* "Robert Holland-Martin: A Symposium," Edited by Eleanor Adlard. London: Fredk. Muller Limited, 29, Great James Street, W.C.1. 81 in. x 5½ in. 110 pp. Price 12s. 6d.

stations under this system, but if that is no longer to be permitted, many additional operators, the equivalent of our signalmen, would be needed to staff those locations, the expense of which would be prohibitive.

According to our contemporary, *Railway Signalling*, many competent railway officers consider this to be the probable effect of the rules issued with the order, and therefore not only is there little likelihood of any new manual block working being installed, but much of the mileage at present so worked will have to be converted to automatic signalling, controlled by track circuiting, the most usual method adopted in America for applying the space interval.

That some step should be taken to replace the timetable and train order system by something more modern is not surprising. The second decision of the Commission, as stated, goes further still and requires automatic train stops or control, or continuous cab signalling wherever speeds of 80 m.p.h. or more are met with. About 23,500 miles of track are affected thereby, involving a heavy construction programme, not to speak of the subsequent maintenance that will be involved. As it is speed that forms the basis of all these new requirements, it follows that even those sections of line where traffic is very infrequent but the particular speeds mentioned are attained, if only by one or two trains, will have to be equipped with the stipulated devices, unless exemptions from the order are allowed.

The Commission admits, it is true, that speed alone does not constitute an adequate means of judging what safety equipment is called for on a line, and presumably, therefore, some discretion will be exercised in enforcing the programme now contemplated. If speed alone were to decide the question, then the operation of only one train over a route at 80 m.p.h. would mean that the whole of it would have to be fitted with automatic stop, train control, or cab signalling equipment, and many lines doubtless would take the simple course of reducing the speed, just sufficiently to escape complying with the order. In some cases, however, where these modern high-speed long-distance trains are being operated on long runs the railways will not be able to resort to such a simple expedient without adding greatly to the overall timings, which will detract considerably from the appeal these trains now make to travellers.

It is difficult to understand why the Commission did not merely issue an order obliging the railways to instal certain types of equipment within a specified time on such sections of route as it should see fit to schedule, after inquiry into the conditions obtaining there, rather than make one resting on a basis providing little or no criterion of the necessity for such extensive work. The amount of apparatus required will be very great, on the lowest estimate, while, as has been stressed already in America, large increases of staff will be required to plan and carry out the work and maintain it afterwards. The American signalling industry appears likely to be kept fully occupied for some time, and can count itself fortunate in being comparatively free from the restrictions that are causing the parallel industry in this country so much anxiety at present.

L.M.S.R. Experience in Concrete Bridging

AS a result of twenty-five years' satisfactory experience on the Northern Counties Committee's lines, the policy of the L.M.S.R. for the past decade has been to reconstruct its bridges, wherever possible, in pre-cast reinforced concrete. This practice permits of continuous production under workshop conditions throughout the year, and reduces to a minimum delays to traffic, as little or no speed restriction is necessary after the units are placed in position. A long-lasting deck and continuity of ballasted track also are assured. Moreover, the greater mass of the concrete units gives a smaller period of vibration, and a less lively track over the bridge than with timber or steel decking. A pre-cast concrete span usually is cheaper in first cost than a steel span, and cost of upkeep is much lower. The concrete units were first designed as slabs, generally one or two per track, but, before 1934, limited crane power restricted the size of span that could be handled.

About 1924, however, the T-beam type of unit was introduced, the deck consisting of four or five such beams placed side by side. With the introduction of more powerful cranes

ten years later, it became possible to renew spans of up to 40 ft. in this way. The one serious disadvantage of this design was that considerable constructional depth was required, and the beams could not be used in many cases because sufficient space was not available. Though pre-stressed pre-cast concrete had been investigated before the war, the matter had not been pursued. However, wartime practice in road bridge construction suggested further study of this method for railway underbridges, which showed that the use of pre-stressed beams would permit of a deck about 15 per cent. shallower than with ordinary reinforced concrete. It was this conclusion that ultimately led to the decision to reconstruct Adam Viaduct with pre-stressed pre-cast beams (as described in our last week's issue) to determine the economy and advantages of this method of construction. It will be interesting to learn what conclusions are finally drawn from this experience, and whether the method of tying the beams together into groups, by means of 1½-in. high-tensile rods with grouting between the upper flanges, proves to be satisfactory.

A Hundred-Year-Old G.W.R. Timetable

THROUGH the kindness of Mr. G. Alliez, the Librarian of the Stephenson Locomotive Society, we have had an opportunity of seeing a most interesting old timetable issued by the G.W.R. on October 1, 1847. The G.W.R. is described as "open to Oxford, Gloucester, Bristol, and Exeter"; and the South Devon Railway is "open to Teignmouth and Totness" (there are several slight differences between the spelling of place names 100 years ago and present practice).

This historic timetable, which came to light in the Château de Lignerolles, Normandy, during August, 1944, is in good condition and is arranged on a single sheet of paper measuring 17½ in. × 11½ in. One side is devoted to the actual timetable, and the other is occupied by tabular lists of fares set out in columns headed "Express Train," first and second class, followed by three columns for the ordinary train fares (first, second, and third classes); then come two columns for "Carriages" (four-wheel and two-wheel respectively), and finally two columns for "Horses," the first headed "Each" and the second "Per Pair being same Property." Fares for dogs (on a mileage basis) are also given.

Among the items of general information offered to intending passengers is the notice of the "ten minutes' stoppage at Swindon Junction for Refreshment," an arrangement which was later to achieve great notoriety; details are also given of the numerous stage-coach connections with the trains, and the buses which started from 29, Gresham Street, Bank, one hour before the departure of the trains, calling at all the principal traffic centres between there and Paddington. We are told that "London time is kept at all the stations on the railway, which is 4½ minutes earlier than Reading time; 5½ minutes before Oxford time; 7½ minutes before Cirencester time; 8 minutes before Chippenham and Gloucester time; 11 minutes before Bath and Bristol time; and 14 minutes before Exeter time." A characteristic note of those days runs: "Passengers in Private Carriages, (not being Servants) are required to take First Class Tickets as the Carriage Rates do not allow for reduced Fares, and such Passengers may change on the journey to the Company's First Class Carriages." Another matter of topical interest is referred to thus: "The Electro-Magnetic Telegraph is in operation between Paddington and Slough, and can be seen daily."

The chief thing which strikes one on looking at the train times is the extraordinarily good performances of the expresses, which knocked off the 193½ miles from Paddington to Exeter in just 4½ hours, and London and Bristol in 2½ hours. The fastest time to Bristol in the current timetables is 2 hr. 20 min. Many of the other trains, however, were leisurely in the extreme—even for those days. The 11.30 a.m. from Paddington to Didcot took 3 hr. 20 min. for the 53 miles; and the sparse service on the South Devon Railway showed that 85 to 90 minutes were allowed for the 29 miles between "Totness" and Exeter. But it was the expresses which got the limelight and made the G.W.R. reputation in its fierce struggle against the standard gauge. Some of its accelerations of long-distance trains in fact were the subject of the note under "100 Years Ago" in "The Scrap Heap" on p. 233 of our issue of August 29, 1947, which acquires a new interest in the light of the timetable described above.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Power Reverse Gears

390, Wakefield Road,
Huddersfield, September 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In reply to Old Ashfordian in your September 12 issue, I have to say that I would not venture any opinion whatever as to what is practicable or desirable in the control of aeroplanes.

There is no doubt that it is possible to design and make, for even the largest British locomotive, a manually-operated reverse gear that can be operated, as often as a main-line engine normally requires, without unreasonable effort from the driver. The advantage offered in this respect by a power reverse gear is negligible, and as it is not superior to screw reverse, in accuracy of setting, or reliability in "staying put," it is an unnecessary complication.

I venture to add that, in view of the physical effort normally required of the fireman on a main-line engine, solicitude for the driver may perhaps be just a little overdone.

Yours faithfully,

W. A. TUPLIN

Strengthening of Railway Bridges in Palestine

P.O. Box 546,
Haifa, Palestine, September 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The claim in the article which appeared in *The Railway Gazette* of August 15, page 177, of having had to cope with an increase in engine axle-loads from 17 to 20 tons, I think cannot be substantiated.

Before the war, Palestine had, as may be recalled, half a dozen locomotives with an exceptionally-allowed maximum of 17.7 tons (the rail section throughout is 75 lb.). This was brought, for a short period thereof only, some American locomotives with an 18-ton maximum. The English W.D. locomotives, L.M.S.R. and L.N.E.R., contributed as maxima, I believe, 16.5 and 17.1 tons respectively.

Further, is not the expedient of R.C. slabs of some 16 to 17 cu. yd. (Figs. 1 and 2, scaled, suggest 18 ft. 6 in. by 16 ft. slabs for a gap of 12 ft.), which includes some 224 ft. or 2.5 tons of rail in addition to the $\frac{1}{2}$ in. rodding, a return to the primitive—and perhaps to the pill box roofs of the first war and the U-boat pens of the second—something which a railway cannot afford to adopt as a standard in order incidentally to cause a saboteur some additional thought and a little more explosive.

Yours faithfully,

A. L. JONES

Locomotive Boiler Experiments

University College,
Southampton, September 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The mention in your editorial article on "Heat Transfer in the Locomotive Boiler" (September 12 issue) of the L.N.E.R. experiments with the "E" type superheater will, I hope, be followed by the revelation of the results of these trials. Little mention has been made in the Press of these interesting boilers, which, on paper, are of impressive proportions. Within the shell of the standard Gresley Pacific boiler was contained the largest area of heating surface of any British boiler, this figure being due to the enormous superheater, before which even the superheaters of the L.M.S.R. "Coronation" Pacifics pale.

The figures for the standard and experimental boilers were as follow:—

	Robinson	"E"
Superheater	...	...
Tubes	168 at 24 in.	45 at 24 in.
Flues	32 at 5½ in.	124 at 3½ in.
Elements	32 at 1½ in. o.d.	62 at 1½ in. o.d.
Heating surface:—		
Tubes	1,880 sq. ft.	504 sq. ft.
Flues	835 sq. ft.	2,159 sq. ft.
Firebox	215 sq. ft.	215 sq. ft.
Total evaporative	2,930 sq. ft.	2,878 sq. ft.
Superheater	525 sq. ft.	1,104 sq. ft.
Total	3,455 sq. ft.	3,982 sq. ft.

Although I have seen no figures for the tests, I have been told that the "E" type superheater showed little difference in performance from the Robinson type. This is not surprising when it is considered that in the later experiments with these locomotives, an increase of 35 per cent. in the superheating

surface, and from 180 to 220 lb. per sq. in. in the pressure, produced a negligible difference in the thermal efficiency (the relevant figures were quoted in Mr. Spencer's recent paper).

Although the "E" experiments were made with the original valve events of this class, it seems unlikely that they would have produced a very different result if carried out later. Both the 180- and 220-lb. locomotives gave a coal consumption of 3 lb. per d.b.h.p. hr., despite the different distribution of their heating surfaces, and it is difficult to see that any further alterations to the distribution would have produced a marked improvement.

Yours faithfully,

ARTHUR F. COOK

Salaries of Engineering Staff

Brighton, September 22

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Being of an independent mind and, therefore, not a member of any union, may I through the medium of your columns bring to the notice of chief officers for labour and establishment the financial hardships of members of the engineering staff of British railways, particularly those who are holding positions of some responsibility, such as Assistant to Divisional Engineer, heads of drawing offices, and so on; in fact, those within the income groups of £600 to £800 p.a.

The actual purchasing power of the pound is 5s. or less, compared with 1914, which reduces the £600 income to £150. Most of us had a net income very little in excess of that in 1939, but the cost of practically all essentials is well over 100 per cent. above those of that year.

It is surely time to review the salaries of the members of our industry (an essential industry), most of whom are now hard put to it to make ends meet, having in mind the commitments we have.

Much more could be said, but from an efficiency point of view it should be to the advantage of the companies to have the members of their staff who are responsible to a great extent for carrying out detailed planning, free of financial worries, to enable them to put their minds unfettered to their jobs, where, after all, most of their interest lies.

Yours faithfully,

G. G. R. LACEY

Track Relaying Under Difficulties

57, Collinwood Gardens,
Ilford, Essex, September 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Whilst no one will begrudge the L.M.S.R. engineers the publicity which you gave recently to the St. Pancras track relaying, I think a few words of praise might be said for the work of the L.N.E.R. engineers now preparing the G.E. Section suburban lines for the forthcoming electrification.

The G.E. Section, despite a certain measure of relief afforded by the Central Line extensions, still carries an enormous passenger traffic, and the relaying or redesigning of many track layouts has been carried out recently with minimum interference to train services, and in many cases without cancelling a single train. The work as a whole is many times larger than the St. Pancras relaying, and goes on month after month, instead of the nine weeks of the L.M.S.R. job.

The G.E.R. suburban services always were looked up to as the most efficient, punctual, and reliable of all. The combined effects of the deferment of electrification owing to the war, bad coal, staff shortage, over-age or run-down locomotives and engineering works have caused this proud record to be lost, for a time at least. Delays and breakdowns have brought forth complaints from passengers, and unscrupulous politicians have made capital from a situation which has not been the company's fault.

Despite all this, magnificent efforts have been made by the Operating Department to keep services running. Between Southend and Liverpool Street there are enough temporary speed restrictions to make every train 15 min. late. It is to the credit of all concerned that, except in the depths of winter, the lateness is kept down to 2-3 min. per train. During the snow and ice of last March, when even the Southern Electric was disabled partly, a tolerable standard of punctuality was maintained. This often meant the staff going up and down the carriage sidings at Gidea Park with hammer and chisel, at 3 a.m., freeing brake blocks that had frozen to the wheels.

The G.E. Section Signal and P.W. engineers have carried out some remarkable pieces of relaying overnight. Perhaps the most spectacular was the relaying of Bethnal Green Junction on Sunday, April 13, last. The whole of the West Signal Box junctions and signals were transferred to the East Box, and

the track layout replanned to give 30-m.p.h. speeds through the junction as against 15 m.p.h. before. The West Box had over 80 levers, and yet the transfer, together with the installation of new signals where required, was carried out in one step. The East Box was packed out with engineers working furiously to complete the job. They finished in the small hours of Monday morning just in time for the peak-hour traffic. Trains were flagged through the station on the Sunday.

During June and July, Bow and Stratford West Junctions were relayed in seven stages without interrupting traffic. This work completed the replanning of the Stratford layout, which was restarted last October, and two new avoiding lines are now in operation through the centre of the station.

At Liverpool Street, the entire layout between platforms 7 and 18 is being replanned for the electrification. A start has been made on platforms 16 to 18. These platforms are being replaced at the country end by wooden staging, which is going up while trains still use these platforms. The coal stage for the East Side Suburban locomotives stands right on the site of a double-slip crossing in the new layout. Undaunted by this obstacle, which could not be moved, the P.W. engineers laid the crossing between the supports of the staging, with about 18 in. depth between the ground and the underside of the stage.

Another important item on the electrification programme is the lowering of tracks under 21 bridges between Liverpool Street and Shenfield. The overhead live wires for the 1,500-volt supply need an extra 10-in. clearance under bridges, and of the two alternatives of raising the bridges and lowering the tracks, the latter was the easier. Each bridge has been tackled in four stages, one for each track of the 4-track section, and the entire job will be completed in the early part of next year. In some cases, track lowering has meant rebuilding of platforms on a lower level, without putting the platform out of commission. At Maryland, for instance, one might see a 10-ft. gap in the platform with men working on the new foundations. On the approach of a train, out come the workmen, and down goes a wooden apron over the hole. Passengers board and alight, off goes the train, and the hole at once reappears.

At Newbury Park, on a double-track section, single-line working has been resorted to in order to keep trains running whenever possible; alterations here are in connection with the Central Line extension.

The above represents a small glimpse at the work of the engineers on the G.E. suburban lines recently. Probably not

one in a thousand of the regular passengers realises the extent of the work which goes on each week-end while they take their ease. Both engineers and workmen work long hours on the job at week-ends—sometimes as much as 15 hr. at a stretch. During the week there is no respite, as the next stage of the work has to be got ready, so that the engineers do a seven-day week.

On the hard work of the engineers depends the completion within measurable time of the G.E. electrification, and it is as a daily traveller on the line in question that I put forward this tribute to their efforts.

Yours faithfully,

R. F. YOEUELL

Cleaning Fires en route in India

H.Q., B.A.O.R.,

Bad Oyenhausen. September 22

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—In your issue of September 5 you mentioned that India is making a search for a suitable type of ashpit for fire-cleaning while *en route*, and outlined the drawbacks of the normal pattern.

A design which was developed on the Jodhpur Railway consisted of a concrete and stone saucer about 4 ft. deep by 18 ft. long by about 10 ft. wide (depending on the space available) spanned by a pair of rails supported by longitudinal girders on cast-steel pedestals and ashlar inverted arches. This design overcame nearly all the usual drawbacks. Enough water was normally in the saucer to cool hot ashes and prevent damage to the concrete. At intervals the ashes were nosed out from beneath the track and raked into piles for disposal. This was a much shorter operation than in the normal type.

A later form of this design, in China, consisted of a pair of 15-ft. girders carrying the rails without intermediate support. The girders being out of contact with the saucer, the latter had less tendency to crack.

There are two disadvantages: First, cost is larger, and a derailed axle on a train will cause a wreck at high speed, though at low speed check rails, inswep at the ends, with ramps outside the running rails, will re-rail anything short of a broken axle. But the risk is in any case no greater than with many types of bridge. The advantages of the design will be obvious.

Yours faithfully,

K. CANTLIE

Publications Received

Doing the Job.—The Netherlands Railways have issued a new illustrated booklet dealing with the restoration of their system, and forming a sequel to an earlier publication which described the havoc wrought by the retreating Germans before the liberation of the country. This time the theme is reconstruction and repair. Some striking contrasts are presented between the conditions of buildings and rolling stock at the end of the war, and at the present time. Of particular interest to British readers are views of the waiting room at Arnhem Station after the historic action by British Airborne Forces, and the same room in its present condition. Tribute is paid in pictures and text to the help which the administration has received from other countries in the shape of locomotives and rolling stock. The importance of bridges to Dutch railway communications is emphasised by several views of the Moerdijk Bridge.

L'Année Ferroviaire, 1947 (Railway Year Book, 1947). Paris, 6c: Librairie Plon, 8, Rue Garancière. 9 in. × 5½ in. 224 pp. No price stated.—A foreword is contributed to this first issue of a year book of French railway information by M. Lemaire, General Manager of the French National Railways. The reason for issuing the year book, he says, is the growing awareness among the public of the importance of railway communications to the life and economy of the country. There have been complaints in the past that

general railway information in France has not been easy to come by, and it is the purpose, therefore, of this publication to make facts readily available.

The book is divided into two sections, the first containing general articles and the second being concerned primarily with statistical tables and information condensed for easy reference. Although the treatment in all parts of the book is primarily technical, the first issue contains a purely descriptive chapter on the night activities at a great railway station.

There are numerous half-tone and line illustrations, among the latter being a useful series showing the principal steam locomotive classes of France, Great Britain, and the United States, drawn to the same scale. It is proposed to issue the book annually, and from the first edition it can be said with confidence that a useful contribution has been made to the literature of French railways.

What is a Design Centre?—An increasing number of industrialists are interested in the design centre idea, and as many of them have asked for a concrete account of what such a centre actually does, this booklet has been published by the Council of Industrial Design, Tilbury House, Petty France, London, S.W.1, and supplies the answer so far as it can be supplied by anybody except the governing body of a design centre itself. Briefly, a design centre is an organisation set up by an industry with Government assistance to render the industry as a whole certain services in the field of design which will

help it to keep abreast of progress, improve the quality of its products, and increase its competitive power. A design centre is the instrument of the industry which establishes it—not of the Government or the Council—and its affairs are conducted by a governing committee of which the great majority of the members are appointed by the subscribing firms in the industry.

Practical Hints on Drilling.—To enable the user to obtain, economically, the maximum efficiency from high-speed steel drills, the firm of Arthur Balfour & Co. Ltd., Sheffield, has brought out a useful little booklet, designed to fit easily in the waistcoat pocket, and which covers all the essential points. Included, also, are tables of cutting speeds for metric size and number gauge drills, decimal equivalents of regular sizes of equipment, and lists of different types of drills and the materials on which they can be used.

The Aluminium Courier.—This new publication of the Aluminium Development Association, 33, Grosvenor Street, London, W.1, is designed to encourage the correct and increasing use of aluminium and its alloys. Every issue will deal mainly with a specific application of these materials, the first number, dated August, 1947, being concerned mainly with aluminium structural engineering and house building. The next number of the publication, which is announced to appear at approximately quarterly intervals, will have as its main topic road transport.

The Scrap Heap

KENT FRUIT TRAFFIC BY SOUTHERN RAILWAY

During September the Southern Railway conveyed 22,304 tons of fruit from the Kent orchards.

G.W.R. LINESIDE ALLOTMENTS

Some 980 acres of G.W.R. land inside and outside the permanent way are now being cultivated as allotments by 193,000 employees. Most of the allotments are situated by the lineside, and in a number of cases they are being cultivated by women. It is estimated these allotments are capable of producing sufficient vegetables every year for 80,000 people.

SAFETY FIRST

It is well known that air-liner passengers are supposed to secure their safety belts when their machine is about to land.

As a returning plane was above the Houses of Parliament the other day, the steward called out: "Ladies and gentlemen, you are now passing over the Labour Government. Tighten your belts, please." — *Peterborough* in "The Daily Telegraph."

WITHOUT COMMENT

Extract from speech by Mr. A. Macalpine, President of the National Association of Colliery Overmen:—

"The number of salaried officials being appointed to run the mining industry is accumulating fast.

"In 1935, when we exported 35 million tons of coal to 56 countries, we had 15,000 salaried persons. Today we are not exporting any coal—we are importing it—and we have 22,000 salaried persons.

"When we had 15,000 the cost of the salaries was 2½d. a ton; today it is 1s. 8d. a ton."—From "The Londoner's Diary" in the "Evening Standard."

TRILOGY OF TRAGEDY

In his speech to celebrate the inauguration of the British Electricity Authority, Mr. Shinwell said that they must "complete the trilogy of coal, electricity and gas."

Looking up the Oxford Dictionary to ascertain the exact meaning of "trilogy" one finds: "A set of three tragedies to be performed in immediate succession."

Perhaps Mr. Shinwell was nearer to the truth than he was aware of at the time.—A letter to "The Daily Telegraph" by Lt.-Colonel Sir Godfrey Dalrymple-White.

[We note, also, that the Oxford Dictionary defines a tragedy as "a play or other literary work of a serious or sorrowful character, with a fatal or disastrous conclusion."—Ed., R.G.]

POWERS OF THE POST OFFICE

A woman who was sued at Cambridge County Court for £7 4s. 7d. telephone charges and damage to the apparatus, brought a counter-claim against the Postmaster-General for £100 for medical fees, injury to her daughter's health, and consequent interruption to her professional training. The counter-claim was dismissed and she was ordered to pay £7 4s. 7d.

She said that when she failed to pay her telephone account because she had been away from home the telephone was cut off, and when on her return she wanted to ring her doctor because of illness the exchange refused to put either her daughter or herself through.

Judge Lawson Campbell told her that

she could not proceed against the Postmaster-General except by a Petition of Right, and added, "You have no protection against the Post Office authorities. The Post Office operate under Act of Parliament which makes everything for the Post Office 'heads I win, tails you lose.' They have everything and they have you in the hollow of their hand. If you do not abide by the rules, which are extremely strict, they may say, 'Ah! she has not abided by the rules. It is over a month since the account was sent in. Cut her off.' They are perfectly entitled to do that."

100 YEARS AGO

From THE RAILWAY TIMES, Oct. 2, 1847

LONDON and NORTH-WESTERN RAILWAY.—"A TRAVELLER OF ST. ALBAN'S" is informed that the precautions he suggests have long been adopted in a more effectual manner than he contemplates on the London and North-Western line, carriages of a suitable construction, and fitted with breaks of great power, are attached to the end of each train, and in these a guard is stationed who can observe all that passes and signal the engine driver instantaneously when required. When the train is very small one guard's carriage suffices, but otherwise, in addition to the guard at the tail, another is stationed in front; but if the carriages of the train exceed 15 in number, then a third guard and carriage is placed in the centre. "Travellers" are generally too much in a hurry when they resort to the railway to notice these important, though costly, precautions for their safety, but which, if generally known, would tend to tranquillize the minds of the most timid.

Euston Station, September 25, 1847.

CAN BE TAKEN TWO WAYS!

The Daily Mail, recording the appointment of Mr. Harold Wilson as President of the Board of Trade, stated:

"The new chief is a hard worker. His first job will be to order a bed to be installed in his office."

WARMING-UP

In preparation for the general seasonal restoration of steam heating on L.M.S.R. main line and suburban passenger trains, starting Monday next, over 30,000 flexible pipes are being fitted to 15,300 passenger carriages throughout the L.M.S.R. system.

A TRAVELLER'S TALE

Disgruntled citizens who are prone to deplore what they believe to be an almost total disappearance of good manners and neighbourly spirit, may take heart of grace from the recent experience of a friend of mine, lately returned from holiday.

It was his fate to undertake, accompanied by his family and a mountain of luggage, a long and tiresome railway journey involving several changes. The porter who installed him and his impedimenta at the outset showed no sign of resentment at being asked to perform this herculean task. He shouldered trunks and suitcases with a nonchalant, even cheerful, air, and was almost gushingly grateful for the small solatium bestowed upon him by his friend.

Then he said: "You'll have a bit of a scramble at — Junction, sir. If you like, I'll telephone down the line, and ask a porter to meet you there." My friend gladly accepted the offer, and the operation, in due course, was entirely successful.

Stationmasters, of course, are accustomed to be asked to perform services of this kind for such passengers as have the temerity to approach them, but stationmasters are lordly men, possessing very wide powers. That there are men of less exalted station willing to play the good Samaritan to travellers in distress is surely a sign that the age of chivalry is with us still. It would be churlish to regard it as a commentary on the often-discussed tipping question.—*Northerner* II in "The Yorkshire Post."

CHINESE RAILWAY STORIES—I

By Cyril G. C. Wayne

The following incidents concerning native personnel, trivial in themselves, served to give momentary relief from the ordinary round of duty of a British railwayman in China.

When the Traffic Manager of the railway to which the writer was attached first arrived in China, he was so full of enthusiasm that, without interfering with his office duties, he would spend a night on the line inspecting and supervising the traffic working. On one occasion, when discussing the merits of certain stationmasters with the Chief Traffic Inspector of the line, the latter stated that he suspected that a stationmaster at a crossing station about a hundred miles away frequently slept while on night duty. It was decided then and there to make a test, so the following message was sent without the name of the sender being given:—"What time is it by your clock?" Immediately came the answer:—"Same time as by yours." It was just after 2 a.m., and both officials were feeling a little sleepy, but they asked him, "What time is that?" Just as quickly he replied "Right time, of course," showing that he was very much awake. The stationmaster did not have to wait long for promotion.

EXAMINATION ANSWERS

This calls to mind the answer given by a learning guard. The 24-hour system is in force on Chinese railways, and one of the questions in the examination paper used to be: "What time is 23.55 hours?" "Nearly the next day" was his answer, and this was given full marks. Students suffering "book indigestion" were often flooded by the most simple questions. "Which end of a return ticket do you date?" led many astray. One aspirant to railway honours, when asked to put down the name of the Minister of Communications, inserted another's name, explaining that everyone knew who the present Minister was, but he could go one better, and reveal the name of the Minister who would shortly be given the position.

Some excuses for neglect of duty were, to say the least, naïve. To help to prevent stationmasters in charge of small stations absenting themselves during the slack hours of the day, it was arranged that they must appear on the platform, and flag each non-stopping train as it ran through. One day Mr. Wong was not in evidence as the Limited express passed his station. Every Chinese employee under a foreign head of department was given a chance of defending himself, so the usual charge sheet was sent in this case, and came back with the defence: "I was there all right, but your train kicked up such a dust that you could not see me." The attempt to throw dust in the eyes of the superior failed.

DECAPITATION

On one occasion the Railway Administration appealed to the Chinese military authorities for their co-operation in order to reduce the number of soldiers travelling without tickets. Orders were issued immediately to the Chinese Military Police that all such offenders were to be decapitated. This was done, and the chopped-off heads were then placed in baskets and hung at the entrance to platforms as a warning to others. After exhibition at, say, Nanking for three or four months the same heads were despatched at Government tariff for further exhibition at some other important station.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Brown Coal for Locomotives

A contract has been placed with the German firm of Henschel & Sohn for two sets of equipment and spare parts to convert locomotives for firing with pulverised brown coal. This step has been taken as a result of the report by two engineers of the Rolling Stock Branch, Messrs. W. O. Galletly and W. H. Chapman, who visited Germany recently to study the progress of pulverised fuel firing.

In the locomotives to be converted, the normal grate and ashpan will be replaced by a brick-lined furnace, with two burners installed in the rear wall. The pulverised fuel will be carried in a sealed container in the tender, replacing the normal coal bunker, and will be fed into the furnace by means of two feed-screws in a trough at the bottom of the container. Turbine-driven fans at the rear of the tender will blow the fuel into the burners. The two sets of equipment will cost £12,200, and are to be ready for shipment by the end of February next year.

WESTERN AUSTRALIA

Walking Tours

With the advent of cooler weather, the Railway Department has restored the Sunday hiking excursions which proved so popular in pre-war years, but which were discontinued during the war on account of coal and manpower shortages. The first excursion this year was run in June, when 2,000 hikers were taken by train from Perth to Serpentine, a distance of 34 miles, from where they hiked to the Serpentine Falls, a distance of approximately 3 miles. The fare was 6s., and hot water and milk were provided by the department at the lunch site adjacent to the falls.

Other trips have been to Northam, Chidlow, Bunbury, York, and Harvey, the distances by rail ranging from 30 to 115 miles; and on some of the excursions up to 4,000 passengers have travelled, the fares varying between 3s. and 8s. 6d.

Scenic Rail Excursion

Another innovation, which has proved exceedingly popular, is a Sunday afternoon "Ramble by Rail," on which a special train from Perth runs on a round trip through the Darling Ranges for a distance of approximately 60 miles. This tour is conducted, and a pamphlet distributed to passengers draws attention to points of interest *en route*. Afternoon tea is included without additional charge. The excursion is designed for the "not so young," and provides a pleasant and leisurely afternoon outing for the older folk while the younger members of the family are partaking of the more strenuous pastime provided by the hiking excursions.

ARGENTINA

British Experts in Argentina

The Argentine Government has secured the services of two British experts, who are already in Argentina and are studying ways and means of achieving the closest co-ordination of railway transport under the new régime. They are Mr. H. A. Short, Deputy Traffic Manager of the Southern Railway; and Mr. H. G. N. Read, Assistant Chief Commercial Man-

ager (General) of the London Midland & Scottish Railway. In addition, two experts on railway electrification, Mr. I. Lydall and Mr. C. Blackburn, have arrived from England in order to advise the Argentine Government on the feasibility of extending electric traction to the remaining suburban lines in Buenos Aires. It will be recalled that of the four principal broad-gauge systems serving the federal capital, the Central Argentine and Buenos Ayres Western employ electric traction; the Buenos Ayres Great Southern has both diesel-electric and steam; and the Buenos Ayres & Pacific uses steam only. The narrow-gauge suburban services of the Argentine State Railways are worked principally by Ganz diesel cars.

UNITED STATES

Union Pacific C.T.C. Extension

Mr. G. F. Ashby, President of the Union Pacific Railroad, announced on September 9 a \$6,000,000 programme for the extension of C.T.C. (Centralised Traffic Control) between Salt Lake City and Caliente, Nevada, a distance of 329 miles. This new installation, due to be completed next year, will link up with the existing C.T.C. which has been in operation for two years on the 300 miles between Caliente and Daggett, California. This will provide the Union Pacific with the longest mileage of C.T.C. ever installed, 629 miles from Salt Lake City to Daggett.

In addition to the C.T.C. territory from Daggett to Caliente, the Union Pacific also operates C.T.C. between Pocatello and Glens Ferry, Idaho, a distance of 160 miles; a 78-mile C.T.C. system between Rieth and La Grande, Oregon; and 100 miles of C.T.C. between La Grande and Huntington, Oregon. The new Salt Lake City—Caliente installation of 329 miles will increase Union Pacific C.T.C. mileage to 967 miles.

Passenger Relations in Working Timetable

In recent years the Chicago & Eastern Illinois has printed in its working timetables helpful notes to the staff on the cultivation of good relations with the public. When the schedules call for acceleration, for example, the importance of living up to the promise of the timetable by attention to punctuality is emphasised. If late running is unavoidable, conductors are advised that it is their duty to inform themselves as fully as possible of its causes so that they may answer passengers' questions; and they also should pass on the information to Pullman and dining car staff for a similar reason.

NEWFOUNDLAND

Branch Line Closing Opposed

The Government's decision to close a branch railway running from Brigus Junction to Carbonear, on the Eastern Shore of Newfoundland, has brought a protest from the Harbor Grace Town Council. The council said the 38-mile line served one-fifth of the population of the island, and that closing it would be "ruinous" to business and create unemployment. The Government decided to close the branch line because of a \$40,000 annual operating loss. The council's protest said that roads in the area were "physically impossible"

of carrying heavy traffic, and that road transport costs would be higher than rail rates.

"If this railway is closed," the protest said, "there will be a violent disruption of business . . . and the eventual result will be the dispersal of population with an inescapable rise in costs of Government administration and services."

SOUTH AFRICA

Telephone Communication with Trains

A cheap and practical method of providing telephone communication between a moving train and any part of the Union without using radio is being tested. The basic principle is the use of induction between rails and an existing telegraph line running parallel with the track. Successful experiments have been made already in various parts of the Union, and railway telecommunications engineers are satisfied that Union research is ahead of most countries.

Efficient radio communication with all trains in the Union would be costly because of the extensive railway network and the great distances covered. A method had to be devised which was cheap, simple, and applicable to trains running beyond the borders of the Union. Operating requirements are such that reliable communications are vital to the efficiency of the railways.

Under the method of communication now being tried out, the crew on a train would be able to converse with a station a few miles ahead, with an approaching or a following train, or with a control office 100 miles away.

From the point of view of expense, radio on the railways is more appropriate to confined areas, and experiments are being carried out in marshalling yards for controlling shunting locomotives from a local transmitting station.

INDIA

Railways Clearing Refugees

A number of trains carrying thousands of refugees between India and Pakistan was run daily during the weeks that followed the setting up of the two Dominions. Two or three trains in each direction were run every day between Lahore and Amritsar, which are equi-distant from the border town of Atari. A number of refugee specials ran also from Fazilka and Ganda Singhwala, two border towns, into Ferozepore. In the reverse direction, refugees were cleared by rail from Ludhiana, Jullundur, and Ferozepore into Lahore.

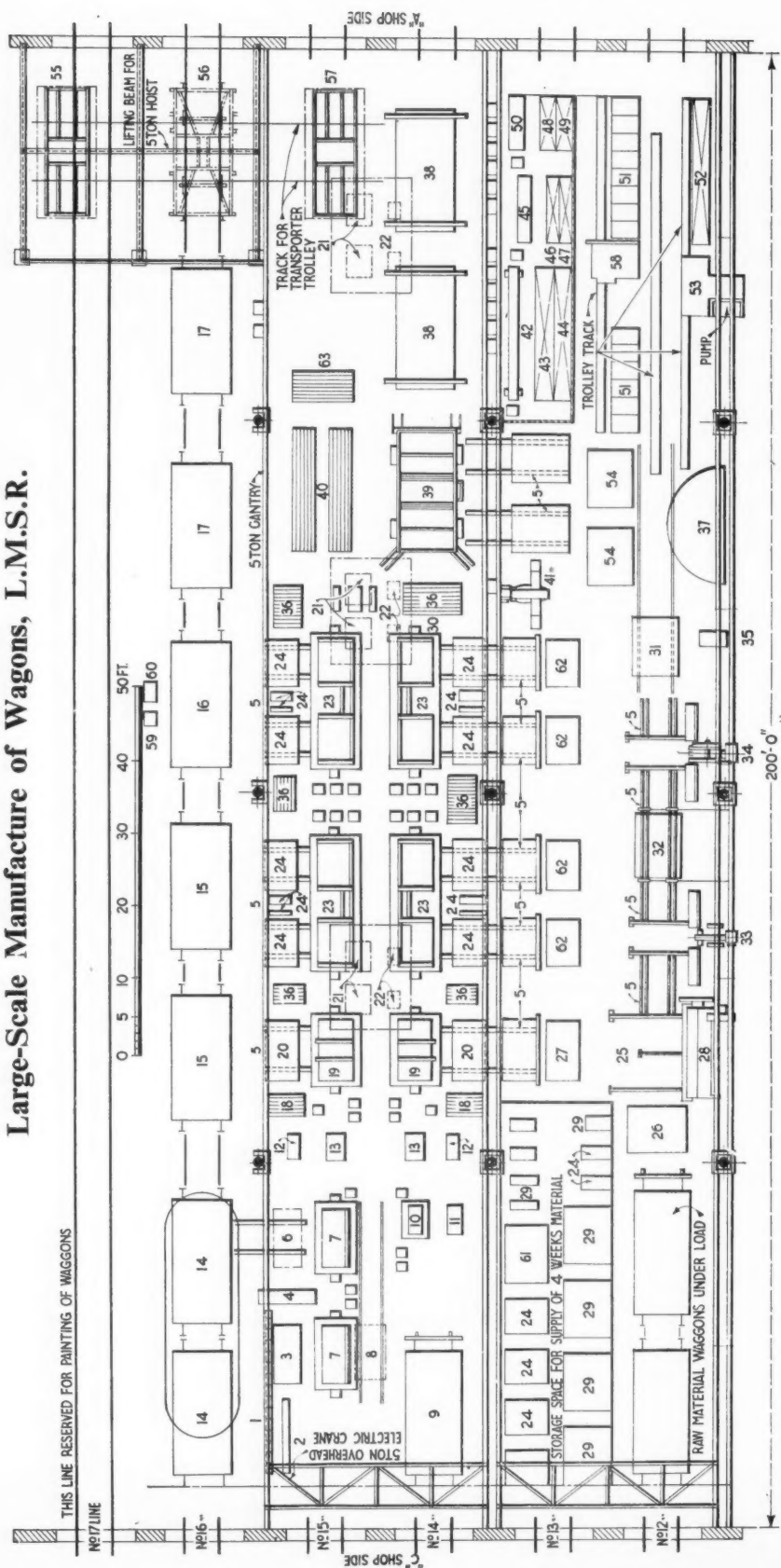
The movement of refugees by special trains extended beyond the limits of the North Western and the Eastern Punjab Railways in the beginning of September. The Jodhpur State Railway ran special trains from Hyderabad (Sind) to Mirpur Khas, to clear Sind refugees.

Air Transport for Railway Personnel

Railway personnel who had elected to serve in India were flown from Lahore, Karachi, and Rawalpindi to Delhi from September 3 to September 6 by 12 R.A.F. Dakota aircraft. Pakistan Government personnel were flown from Delhi on the return journey. The first party of India personnel, numbering 200, landed at Palam aerodrome on September 4.

This measure was necessitated by the disturbed conditions of railway travel which have prevailed in the Punjab since the second week of August, and the need for manning adequately the railway systems of the two Dominions.

Large-Scale Manufacture of Wagons, L.M.S.R.



- 1 Roller conveyor for end door pressings.
- 2 End door channel jig.
- 3 End door pressings.
- 4 End door channels (pressings).
- 5 Roller trestles.
- 6 End door complete.
- 7 End door welding jig.
- 8 Roller table for feeding end doors to jig.
- 9 Wagon under load containing side and end door pressings.
- 10 Side door jig.
- 11 Side door plates.
- 12 Bottom door plates.
- 13 Bottom door jig.
- 14 Fitting of side, end, and bottom doors.
- 15 Pent painting position.
- 16 Riveting door brackets, etc.
- 17 Welding shell to underframe.
- 18 End stanchions.
- 19 Fixed end jig.
- 20 Fixed end plate.
- 21 "T" transformer.
- 22 "C" condenser.
- 23 Side jig.
- 24 Side plates.
- 25 Roller pedestal.
- 26 Feeding position of plates for guillotine.
- 27 Storage for fixed end plates.
- 28 Guillotine.
- 29 Floor plates.
- 30 End units complete.
- 31 Roller top table.
- 32 Movable portion of conveyor.
- 33 Punching and notching machine.
- 34 Notching machine.
- 35 Single spindle drill.
- 36 Side stanchions.
- 37 Radial drilling machine.
- 38 Rotary welding machine.
- 39 Tack welding jig.
- 40 Side units complete.
- 41 Milling machine.
- 42 Side angle jig.
- 43 Side angles for welding.
- 44 Welded side angles.
- 45 End door beam.
- 46 End door beams for welding.
- 47 Welded end door beams.
- 48 Stanchions for welding.
- 49 Welded stanchions.
- 50 Side stanchions jig.
- 51 Rack bench.
- 52 Stacking of angles for sending.
- 53 Straightening press.
- 54 Storage for bottom plates.
- 55 Wagon body on transporter trolley (lifting position).
- 56 Wagon underframe in position for receiving body shell.
- 57 Transporter trolley in position for body shell.
- 58 Cold saw.
- 59 Rivet heater.
- 60 Rivet storage.
- 61 Fixed end plates.
- 62 Storage for side plates.
- 63 Door end beams.

General arrangement of special production layout for building all-steel welded wagon bodies, Derby Carriage & Wagon Works, L.M.S.R.

Large-Scale Manufacture of Wagons, L.M.S.R.

Special production layout at Derby Works for construction of 2,000 all-steel mineral wagons



Completed 16-ton all-steel mineral wagon

IN 1923 the unit assembly principle for the production of wagons was introduced at the L.M.S.R. Derby Carriage & Wagon Works, the first wagon to be produced under this scheme being the 12-ton open wagon, with timber underframe and body. Mineral wagons with steel underframes and wood bodies manufactured in the same way were adopted generally in 1935.

To meet the growing demand for wagons of increased capacity, a design was prepared in 1944 for an all-steel mineral wagon which would have a capacity of 16 tons, but retained the existing length and wheelbase. A prototype steel wagon was constructed at Derby Carriage & Wagon Works by early 1945, utilising standard steel underframe components as far as possible, but because of the increase in carrying capacity, larger diameter axle-journals and stronger springing gear were incorporated. Steel floor plates $\frac{1}{2}$ in. thick were welded directly to the underframe, and the fixed end, two sides also of $\frac{1}{2}$ in. thick plate, and end door beam, were assembled to the frame as separate units.

The side, end, and bottom doors were fabricated from plate and rolled sections, but although subsequent tests showed soundness of design and construction, it was decided that by using steel pressings for the side and end doors, a more easily constructed and neater door could be obtained, and this modification is incorporated in the production vehicles.

During construction of the prototype, a close liaison was maintained between the design office and manufacturing shops, and problems of distortion, inaccessibility of welds, awkward joints, and so on, were overcome. On completion, the vehicle was subjected to shunting and side and end tipping tests, which it passed satisfactorily. From the knowledge gained during the manufacture of this prototype wagon, the present design of all-steel mineral wagon now in production at Derby was evolved.

The existing assembly line in the erection shop is used for the production of the underframe, which is of standard Railway Clearing House riveted design. The main members are cold sawn to length and straightened in mechanical ram type presses. Double-head beam end millers are used for machining the ends of the

frame members, and subsequent drilling operations are performed on multi-headed single spindle drilling machines.

Tee and angle sections are welded in required positions on the solebar to provide attachment for the side stanchions and support for the floor plate. These sections, together with the brake-lever guard bracket, side-door check-spring bracket, and doorway angle, are welded in the solebar assembly jig. The solebar channels, which are kept on adjacent racks and brought to this jig down sloping ramps, are accurately positioned end-ways against a dead stop by screw clamps. All details are located and held by swing-over location clamps, which are adjusted easily and swung out of position to allow the complete solebar unit to be slid from the jig down ramps. The jig is pivoted on trunnions which enable down-hand welding to be used in most positions. The base channel of the jig is equipped with an adjustable truss bar, enabling the correct amount of camber to be imparted to the solebar.

The axleguards are hydraulically riveted to the solebar in a wheeled assembly-jig moving on rails positioned to feed the main assembly fixture, as shown in the illustration on page 377. Loading of the other large sub-assemblies into the assembly fixture is assisted by overhead cranes. The frame is bolted sufficiently to secure all members rigidly, and then is lifted from the fixture and lowered on to the wheeled trestles for riveting. The underframe is moved along successive stages where the springs, brakework, buffer and drawgear are erected. At the end of the assembly line, the frame is lifted off the trestles and lowered on to the wheels (see page 377); brakework is adjusted, and the frame passed forward for painting and delivery to the body-building shop.

Special Production Layout

The body is made complete, ready for dropping on to the underframe. A special production layout was installed in three bays in the shop, two of which are equipped with a five-ton overhead crane, and the other bay with a five-ton and $\frac{1}{2}$ -ton hoist. To utilise all existing floor space, the welding transformers are supported on platforms slung in the apex of the roof. One bay is limited to component produc-

tion and comprises a raw-material unloading stage, floor plate sequence, finished-component loading ramps, and machine section.

The floor plate sequence commences with the plates being crane-loaded on to a ball-bearing topped table, whence the plates are rolled to the guillotine, where they are sheared for fitting up to the adjacent floor plates, and then passed along on roller conveyors to the punching machine. Here the drain holes are punched and then rolled along to the notching machine, where the plates are notched to clear the side stanchions. After this stage, the plates are given one coat of oxide primer paint on the underside, before being transferred to the fixed main assembly tack-welding jig-loading stage. The machine section is equipped with a cold saw horizontal milling machine, radial drilling machine, and a straightening press. All these machines have some operation to perform in the preparation of the various body framing members before they are passed forward to the assembly bays.

The next bay is laid out for sub and main assemblies; here the body components are jigged and welded together. A complete time-cycle of the assemblies in each jig or jigs was calculated to ensure a uniform flow of assembled parts through the sequence. Revolving jigs, shown in the illustrations, are used, and are evenly balanced when loaded; they rotate through 360 deg. so that only down-hand welding is necessary. On the rotating jigs, contact brushes are fitted to the trunnions to obviate any arcing which would take place between the trunnion and bearing during welding, because of inefficient earthing.

Detail Welding Jigs

The detail welding jigs have been designed to reduce hand fitting to a minimum and to ensure inter-changeability in subsequent sub-assembly and assembly fixtures. Rotary welding jigs are provided for welding the stiffener web plates in the side angles, gussets in side stanchions, and end-door pins to end stanchions, also for the end-door reinforcing channel for positioning and welding the stiffening web. Fixed jigs are used for the bottom doors and for side doors.

Two jigs are needed for the end doors: the first is designed to fix all items on the end door pressing. The end door head channel pressing is dropped in locating blocks, and the main pressing is dropped on the jig and clamped by swing-over stops and two-way clamps; the stops are set to maintain an accurate dimension from the centre of the hinge line to the tops and sides of the doors, thus ensuring the required bottom clearance on the wagon floor.

The commode handles are located by adjustable clamping-bars swung on the main jig. This jig is used primarily for tack-welding the components into position, and final-welding the hinges and commode handles. The door then is transferred to the rotary manipulator, primarily consisting of two pivoted arms, on which the part-welded door assembly is dropped for final welding.

The fixed end is welded in a rotary jig giving down-hand welding access. The top angle is dropped into a position on the jig and located endwise by fixing stops. The two end-stanchions are loaded into the jig and located by clamps. Screw-elevated rollers enable the plates to be rolled from the adjacent stack into position, and lowering the rollers automatically drops the plate into approximate position. Clamping is performed by two-way, quick-acting clamps, designed to give pressure in two

directions, the pressure downwards is approximately twice the pressure across. The method of location ensures that the overall height of the ends is maintained and that the abutment for welding is accurate.

The side units are welded in a jig very similar in its essentials to the fixed end jig. In this case, fixed-distance quick-acting clamps are provided to maintain correct overall length of the side. The side-door fastener tracklets are positioned by taper locating pins, and the plates firmly held in position by swing-over clamps.

Welding the Bodyshell

The bodyshell tack-welding jig positions the various sub-assemblies previously dealt with, to form a complete shell, and quick-acting devices again are used for clamping.

The large floor plates are fed from the adjacent stack through rollers which are elevated and retracted by toggle operated levers. They are tightened by quick-acting side-clamps, and stops ensure the accurate opening for the bottom door. Side and centre plates then are dropped into position against stops to control the door opening. The side- and end-units are dropped into position and secured by the swing-over arms. The bottoms of the side units are forced outwards against stan-

chion stops by means of a screw-jack; only sufficient tack welding to ensure a rigid shell is undertaken in this jig.

The final welding of the shell is undertaken in two manipulators, which consist mainly of two rings; the wagon body is mounted and secured in the approximate centre of the rings. The dimension of the rings is calculated to locate the body about the combined centre of gravity of the body and jig, and the whole is sufficiently well balanced to enable the complete assembly to be rotated easily by two men. The rings are supported each on two special type rollers mounted in a firm frame forming the foundation of the jig.

The body is loaded into the jigs by breaking the rings at two joints per ring, and swing-over clamps facilitate fastening and unfastening. Clamping screws embodied in the rolling rings grip the body and prevent movement in the jig; locking bars are used to locate the jig in any one of the eight positions for welding (see illustrations). Before leaving this jig, the undersides of the floor plates are given a coat of black bituminous paint.

On removal from the jig, the body is moved through to the third bay on a rail trolley, then, as shown in the illustration, lifted off and positioned on the under-frame, using the five-ton hoist for this operation. It then is secured to the under-

frame by intermittent welds between the underside of the floor plates and the various framing members, and with a continuous fillet-weld between the floor plate and headstock, at the non-door end of the wagon.

Final Processes

As the vehicle moves along the line, bottom-doors and release-gear are fitted. On arrival at the end of the line, end- and side-doors are hung; they are lifted into position with the aid of the $\frac{1}{2}$ -ton hoist. The exterior of the body is cleaned and painted, followed by stencilling and lettering, and the final inspection.

Spot inspection on detail and sub-assembly work is made, and to ensure that a high standard of welding is maintained, periodic efficiency tests are given to the welding operators. No. 6 S.W.G. electrodes are used throughout the construction of the body, which involves some 470 ft. of welding, A.C. welding is used throughout. The weights of body units and amount of weld for each unit are as follows:—

Unit	No. per vehicle	Weight (lb.)	Length of weld (ft.)
Body die (r. and l.h.)	2	1,024 (each)	70 (each)
Fixed end ...	1	545	33
End-channel ...	1	248	22
End-door ...	1	607	38
Side-door ...	2	202 (each)	5 (each)
Bottom-door ...	2	119 (each)	20 (each)
Complete body ...	1	5,400	470

Wagon-Breaking in Kenya

Combating pilferage of goods from moving trains

(From a correspondent)

SINCE the end of the war there has been a steady increase in the volume of pilferage on the Kenya & Uganda Railways. A particular manifestation has been a large number of wagon-breakings on certain sections of the line, and especially on the 120-mile stretch between Nairobi and Nakuru, which passes through a heavily-populated native reserve. On this section there are many steep gradients, along which trains must proceed slowly, thus affording easy opportunities to board a train while it is in motion, break open the seal and door of a wagon, and throw some of its contents out on the lineside.

Preventive action against this method of pilferage has taken two forms. First, a simple wagon-locking device has been introduced to hinder the opening of a wagon whilst in motion; and, secondly, police patrols have been travelling on night trains, which were the most seriously affected, and also have been posted at certain stations in the section.

Wagon-Locking Device

Various experiments were made before a suitable wagon-locking device was discovered. It had to be cheap, easy to fit, and readily available in large quantities; and it was not desired to make the locking device a permanent fixture, as this would entail the fitting of it to every covered wagon on the line. Moreover, when more normal conditions return, it is to be expected that the number of wagon-breakings will become negligible, and the need for a locking device will then disappear.

The device that finally was decided on consisted simply of a 3-in. \times $\frac{1}{2}$ -in. bolt and nut, securing the wagon, in place of the usual fixing pin. The bolt and nut are fastened and unfastened by two spanners, and are easy to put on and take off, but extremely difficult to remove when a wagon is in motion.

These bolts and nuts were fitted to all

doors of covered wagons travelling on night trains between Nairobi and Nakuru. For a time they proved very successful, and wagon-breakings almost ceased. After a while, however, they began again, and it was obvious that a skilled gang of thieves, operating in accordance with a preconceived plan, was at work.

The Railway Police strengthened patrols on the trains concerned, placed ambushes along the line, followed trains through the section in railcars, and, in short, took every conceivable measure to combat this fresh outbreak. Finally, they were able to establish exactly where along the line the thieves threw the goods out of the wagon.

After some protracted investigations and inquiries, a gang of three natives was arrested, and most of the goods that had been stolen in the biggest and most recent incident were recovered. The three natives were charged in court, pleaded guilty, and were given prison sentences.

Before he was convicted, one of the natives confessed to the police the method by which the wagon-breakings had been carried out. On the night when it was intended to rob a train, the party would meet at the station in advance of the section where the wagon-breaking was to take place, and two of them would unscrew the nuts and bolts from a door of the selected wagon, whilst the third kept a lookout for the police, and the railway staff. Having removed the nuts and bolts, the two men then climbed into the wagon, just before the departure of the train.

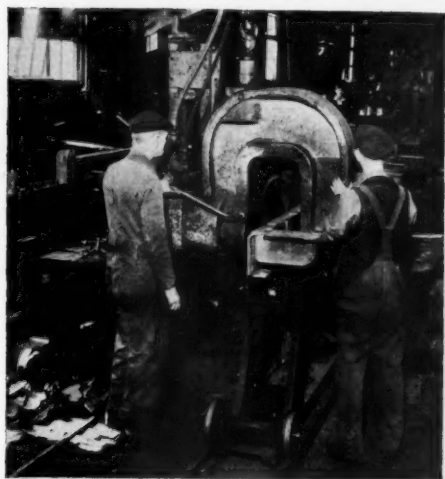
At a point about three miles from the station, on an up gradient and in a densely forested area, the two men opened the door of the wagon and threw out various packages of goods on the lineside. In the meantime, their confederate, who had walked along the track to this point, hid the goods in the forest nearby, and awaited the return of the other two men. These

two, when the opportunity came, jumped out of the wagon and returned to the spot where the goods had been thrown out. It was then an easy matter for the three men to remove the goods to a remoter hiding place, and later dispose of them to some of the many shops in the native reserve.

INSTITUTE OF TRANSPORT INAUGURAL MEETING, 1947-48.—The inaugural meeting of the 1947-48 session of the Institute of Transport will be held on Monday, October 6, at 5.30 p.m., at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, when the Retiring President, Mr. R. Stuart Pilcher, will present the awards for 1946-47, and the new President, Mr. T. W. Royle, will deliver his Presidential Address on "The New Era of Transport."

SWEDISH ENGINEERS VISIT GREAT BRITAIN.—Two bridge engineering experts from the Swedish State Railways, Mr. John Bjork (Bridge Manager) and his assistant (Mr. Sten Rein) are paying a ten-day visit to this country to see some of the latest British railway engineering developments, and to visit notable British bridges. Their programme is sponsored by Mr. W. K. Wallace, C.B.E., Chief Civil Engineer, L.M.S.R. On September 29 they saw a demonstration of colloidal grouting at St. Pancras Station, where extensive track relaying is in progress (see our August 8 issue). Other visits have been paid to the Middlesbrough rolling mills and welding fabrication shops of Dorman, Long & Co. Ltd.; the Tyne Bridge, Newcastle; the L.M.S.R. concrete depot at Newton Heath (Manchester); and the pre-stressed concrete Adam Viaduct, L.M.S.R. (described in our September 26 issue). Today, October 3, an inspection will be made of the Britannia tubular bridge over the Menai Straits on the L.M.S.R. main line to Holyhead. Further visits in the programme are: October 6, London Transport bus garages and welded bridges; and October 7, the Dover train ferry dock, Southern Railway.

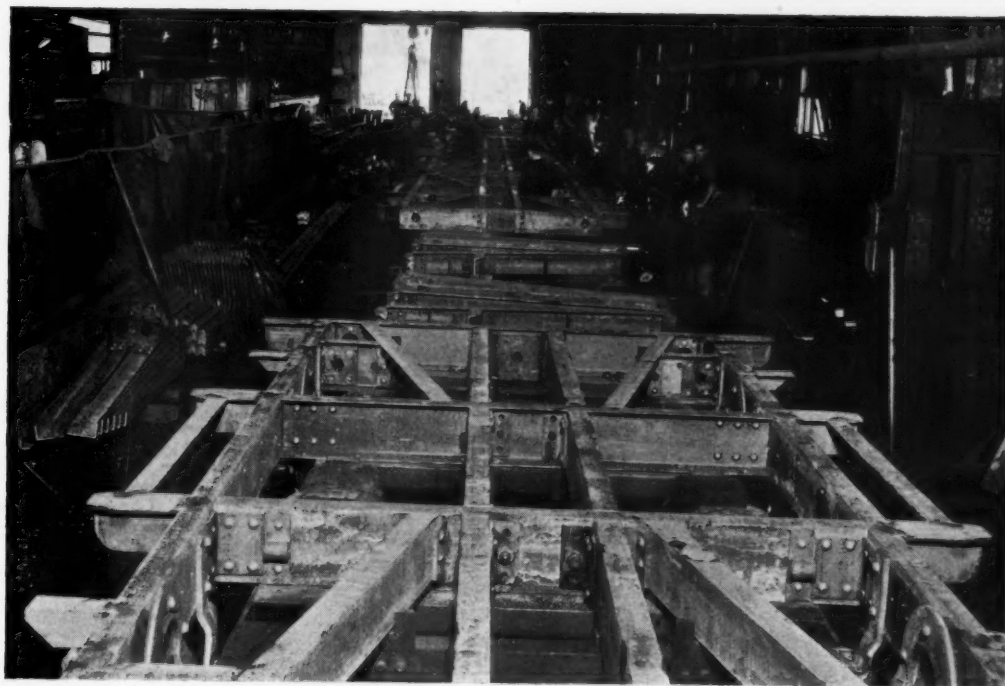
Large-Scale Manufacture of Wagons, L.M.S.R.



Underframe assembly, riveting axleguards to solebar



Showing the completed underframe assembly being lowered on to wheels



Underframe assembly, main assembly fixture

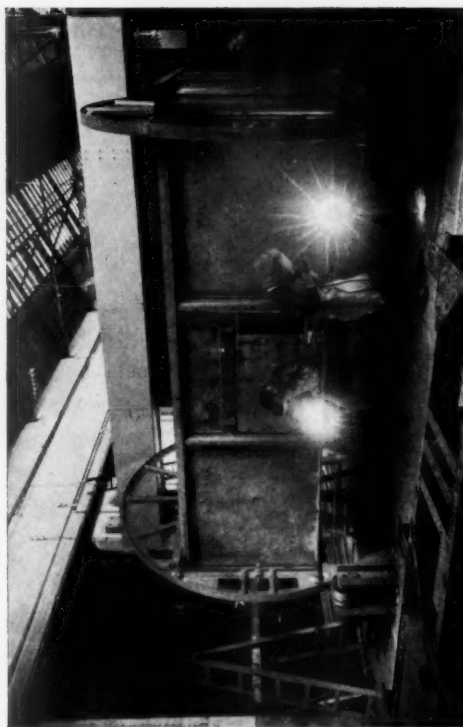
Large-Scale Manufacture of Wagons, L.M.S.R.



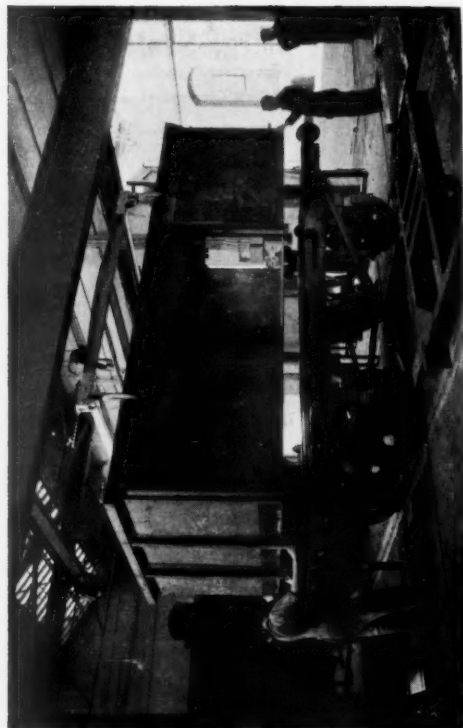
Rotating side-unit jig to complete welds on other side of unit



Main assembly jig; rotating the jig to carry out horizontal welds



Main assembly jig; wagon body being welded together



Completed wagon body being lifted from transporter trolley to underframe

Wide Range of Beyer-Garratt Locomotives

Types supplied to South Africa and Nepal

THE photograph reproduced on this page shows two Beyer-Garratt articulated locomotives completed recently at the works of Beyer Peacock & Co. Ltd. and give a good idea of the wide range of this type of locomotive.

In the background is shown one of the 185-ton 3 ft. 6 in. gauge class GEA, of which 50 have been built for the South African Railways, and which was fully described and illustrated in *The Railway Gazette* of March 22, 1946. This locomotive has an overall length of 88 ft. 5 in. and a total tractive effort at 85 per cent. B.P. of 63,030 lb.

In the foreground is shown the 47-ton locomotive recently delivered for service on the 2 ft. 6 in. gauge Nepal Government Railway. This locomotive, which has an overall length of 49 ft. 6 in. and an axle-load of only 5 tons, is similar to other Beyer-Garratt locomotives supplied to the Sierra Leone Government Railway, and below are some particulars of its design:—

Cylinders (4), dia.	10 in.
stroke	16 in.
Coupled wheels, dia.	2 ft. 4 in.
Wheelbase, each unit	13 ft. 9 in.
rigid	6 ft.
Total ...	43 ft. 4 in.
Boiler heating surface, tubes ...	647.5 sq. ft.
firebox ...	76.5 sq. ft.
Superheater ...	724 sq. ft.
Total ...	120 sq. ft.
Combined total ...	844 sq. ft.
Grate area ...	18.2 sq. ft.
Boiler pressure, lb. per sq. in. ...	175
Tractive effort at 75 per cent. B.P. ...	15,000 lb.
at 85 per cent. B.P. ...	17,000 lb.
Adhesive weight in working order ...	30.3 tons
Total weight in working order ...	47.5 tons
Water capacity ...	1,300 gal.
Fuel capacity (coal) ...	3 tons

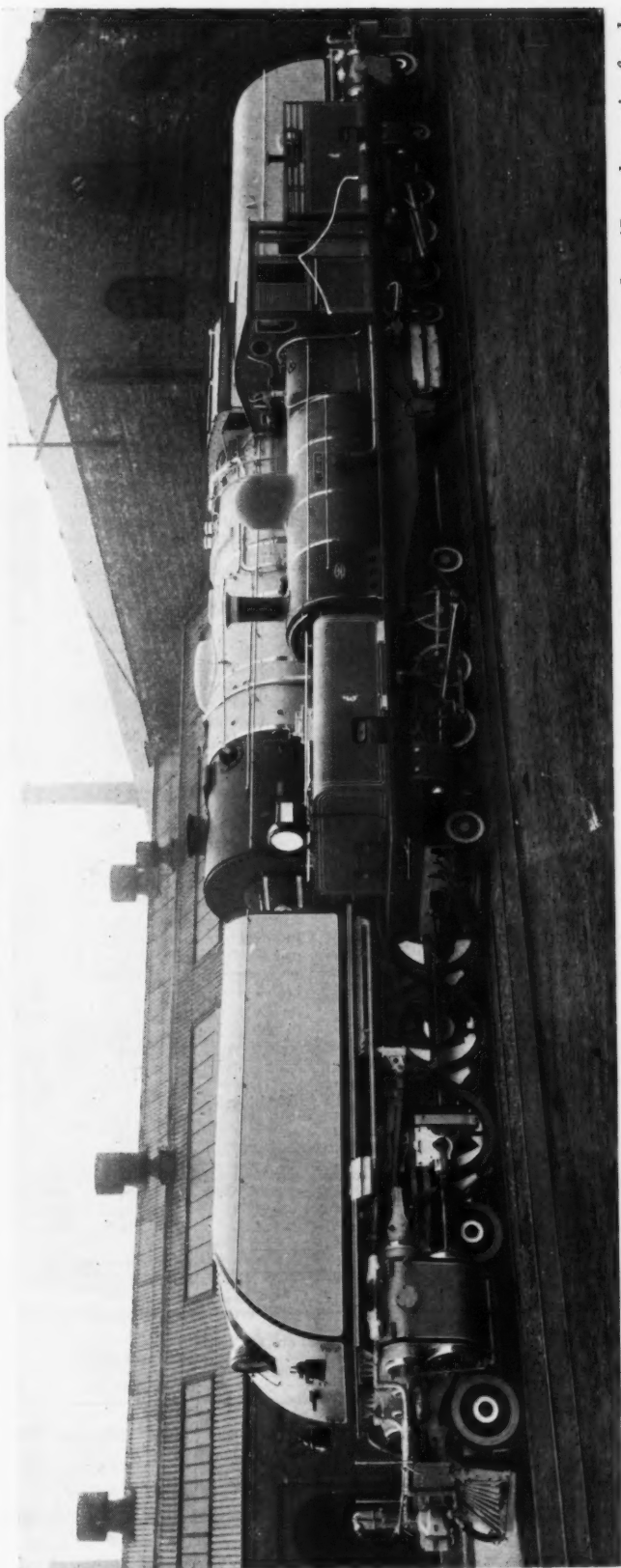
OTTOMAN RAILWAY HOLDING CO. LTD.—

A net revenue of £26,736 was received for the year to June 30 last, an increase of £50. After paying £21,462 as debenture interest, a balance of £5,274 remained available for redemption of stocks.

NEW STATION AT LONGBENTON, L.N.E.R.—

The L.N.E.R. has just opened a new station at Longbenton, near Newcastle, on the North Tyneside electrified lines, to accommodate staff of the Ministry of National Insurance transferred to the offices recently built there by the Government. The station was brought into limited use on July 14 this year, but the whole of the proposed accommodation will not be completed until a later date. As at present constituted, the station consists of two 500 ft. long platforms, brick-faced, with concrete coping and ash paving; and a temporary booking office placed at the entrance. A footway across the railway has been constructed at the Benton end of the platforms, together with cantilever barriers and huts containing train indicators and telephones so that the railway staff can allow passengers to cross the lines, which are electrified, only when it is safe to do so. This is a temporary arrangement until a footbridge, now in course of construction, is completed. At an early date the platforms will be lighted by electricity. Passenger trains serving the new station are principally electric and amount to six a day. Steam trains running between Manors and Newbiggin also serve the new station to the extent of one a day each way.

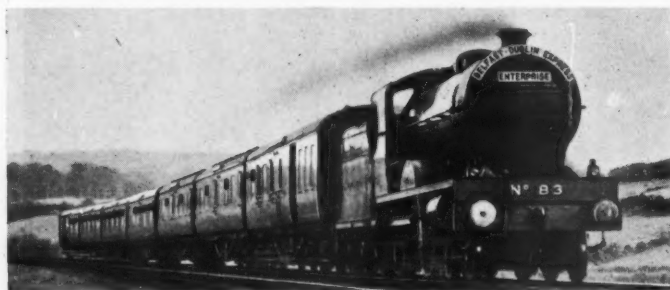
Beyer-Garratt Locomotives for South Africa and Nepal



In the background, one of the 185-ton 3 ft. 6 in. gauge class GEA Beyer-Garratt locomotives for South Africa, and in the foreground, a 47-ton locomotive for the 2 ft. 6 in. gauge Nepal Government Railway

G.N.R.(I.) "Enterprise" Express

Regular non-stop service between Belfast and Dublin



THE first advertised regular non-stop train between Belfast and Dublin was introduced by the Great Northern Railway (Ireland) on August 11, and a special named train, the "Enterprise," is working the service. In the past, non-stop runs have been made between the two Irish capital cities only on special occasions, and the present innovation has been justified by the volume of traffic carried by this route. The distance of 112½ miles between Belfast (Great Victoria Street) and Dublin (Amiens Street) is covered in 2 hr. 15 min., and the actual timings under the present timetable are as follow:—

SOUTHBOUND		
Belfast dep.	...	10.30 a.m.
Dublin arr.	...	12.45 p.m.
NORTHBOUND		
Dublin dep.	...	5.30 p.m.
Belfast arr.	...	7.45 p.m.

The usual stops for customs at Goragewood for northbound trains, and at Dundalk for southbound trains, have been omitted, and examination of luggage is now carried out at the terminal stations; consequently, passengers are advised to arrive at the respective stations some thirty minutes before the train departure time.

The "Enterprise" train consists of 7 bogie coaches, namely: 2 centre-corridor third class and brake (28 tons); 2 centre-corridor third class (28 tons); 2 side-corridor first class (32½ tons); 1 buffet car (30 tons).

The total weight of the train is 207 tons, and seating accommodation is provided for 72 first and 200 third class passengers; there are also a further 30 seats in the buffet car. A departure from normal G.N.R.(I.)

practice has been made in this case, in that second class accommodation is not provided on the train.

Each of the coaches making up the train is of timber construction with tempered masonite outside panelling and timber roof. Underframes and bogies are of steel-channel construction, the latter being of 10-ft. wheel-base, and all were built at the G.N.R.(I.) Dundalk Works. With the exception of the two first class coaches, which are of recent construction, the vehicles are of the standard type in use for some time on the G.N.R.(I.). The third class vehicles are 58 ft. long and seat 70 persons, or 30 in the brake coaches.

The diagram below shows the layout of one of the first class coaches, which are of the side-corridor type with a centre transverse passage. As will be seen, these coaches are 60 ft. long and have 6 compartments, each seating 6 passengers; entrance on each side is gained by three doors. Separate toilets are provided for ladies and gentlemen, and the ladies' toilet is provided, in addition to the

usual fittings, with a full-length mirror and a mirror seat, which is movable. The floors of both toilets are of terrazzo, and the walls are panelled in glazed Unilac. Beresford pedal operated W.C.s are fitted.

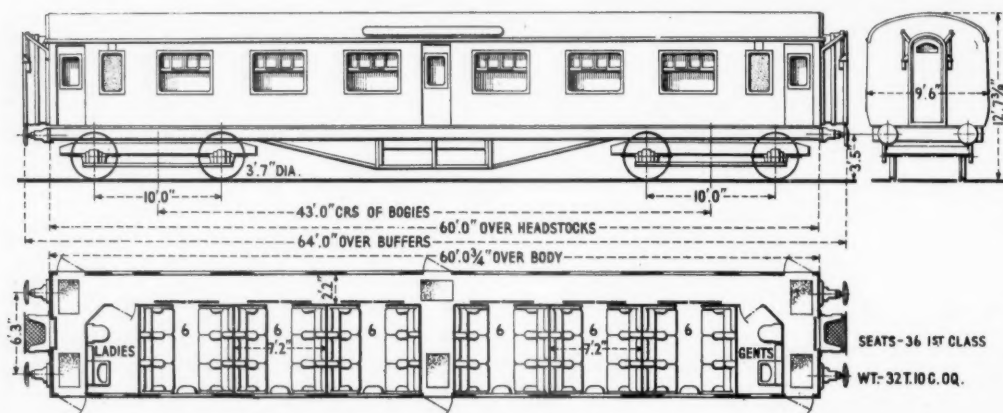
The compartments are panelled in mahogany, and they are provided with double luggage racks and small tables at the windows. The seating, which is well sprung, is a combination of Hiltoria spring seats and Dunlopillo cushions. Compartment and corridor ceilings are covered with cream Rexine, and the corridor below the cantrail with brown Rexine. The side corridor and compartment floors are covered with Korkoid, and have recessed mats at the six entrance doorways. Heat radiators are fitted in the side corridors and lavatories, in addition to the compartments.

The train is hauled by three-cylinder compound locomotives, which carry two headboards, "Belfast-Dublin Express" and "Enterprise" for this duty.

No intermediate stop for locomotive purposes is necessary, as with such a com-



Ladies' toilet compartment



Side view and layout of first class coach

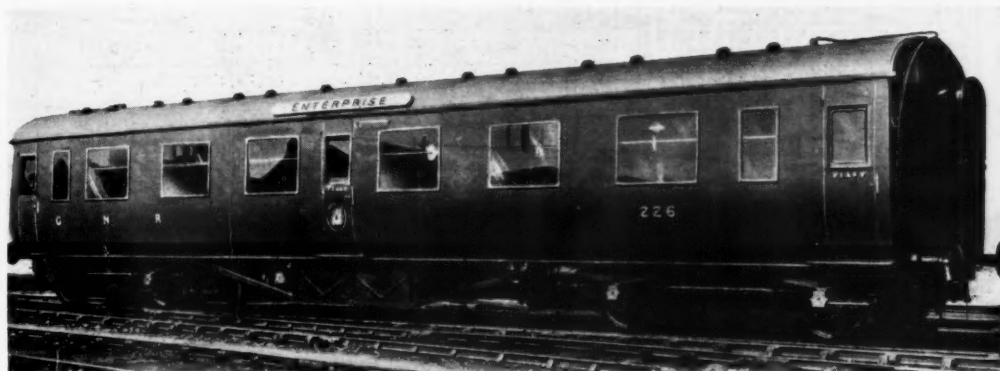
paratively light train sufficient water is carried in the 3,500-gal. tender to enable the locomotive to run the full journey with an adequate safety margin.

The ordinary advance booking and seat reservation arrangements are used for the

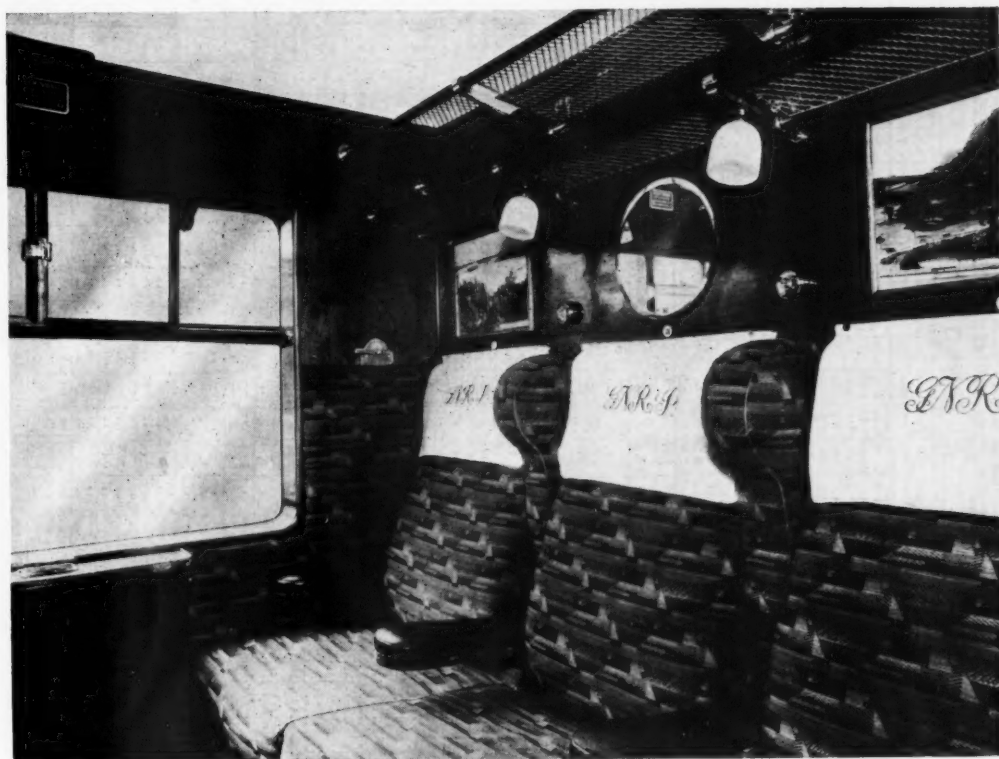
"Enterprise," on which no standing passengers are allowed. It is, however, intended to introduce an experimental system of seat reservation, under which a special book of first and third class (paper) seat reservation tickets for each day's ser-

vice will be used; the tickets will be numbered consecutively up to the full capacity of the train.

Meals are served throughout the journey in the buffet car, which is provided with a fully-fitted modern cocktail bar.



"Enterprise" Express first class coach



Interior of first class coach, showing double luggage racks

RHODESIA RAILWAYS TRUST LIMITED—Sir Dougal O. Malcolm said at the general meeting of the Rhodesia Railways Trust Limited that he considered the purchase of the Rhodesia Railways share capital by the Southern Rhodesia Government, for the sum of £3,150,000, to be a fair bargain, and one that should ensure benefit to both sides. This purchase took effect on March 31 this year. The dividend of

£125,000 gross of the Rhodesia Railways for the year ended September 30, 1946, had been paid to the Rhodesia Railways Trust. It appeared that the moment at which the bargain with the Government had been made was a favourable one for the trust. They would continue their activities as an ordinary trust and investment company, substituting a wide range of investments for the one very big investment which they

had sold. Up to date they had found investments for £1,560,000 out of the £3,150,000 received from the Government. A special committee common to the trust and to the British South Africa Company had been set up to look after the day-to-day investment business of both companies, and the Chairman had reason to hope that a period of steady prosperity lay before them.

UP TRAINS.

Below Bristol this Train carries 3rd Class Passengers only.

TRAINS ON SUNDAYS ONLY.

[illegible]

The Letters **W** and **S** indicate that the Train will call at the Stations opposite to which they are placed on Wednesday and Saturday

October 1st 1847

Facsimile of the Great Western Railway timetable sheet for October 1, 1847, showing the accelerated services introduced a month earlier
(See editorial article on page 369)

G.W.R. Timetable and Fare Sheet of 100 Years Ago

DOWN TRAINS leave PADDINGTON STATION, all (excepting the Express Train) calling at Slough, Reading, Swindon, Chippenham, Bridgewater, Taunton & Tiverton Road Stations, with Branch Trains to Oxford & Gloucester.									
For Gloucester & Oxford.		For Bath and Bristol.		For Exeter.		For Totness.			
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
6 0 a.m.	11 30 (Cheap.)	6 0 a.m.	12 0 noon.	6 0 a.m.	12 0 noon.	9 45 (Express)	2 0 p.m.	10 15 a.m. Day Mail	5 30 (Express)
7 15 " (Cheap.)	12 0 noon.	7 15 " (Cheap.)	1 0 p.m.	7 15 " (Cheap.)	2 0 p.m.	10 15 a.m. Day Mail	5 30 " (Express)		8 55 " Night Mail
7 45 "	2 0 p.m.	7 45 "	4 45 "	7 45 "	5 30 (Express)				
9 45 " (Express)	4 45 (Mail.)	9 45 " (Express)	5 30 " (Express)	9 45 " (Express)	8 55 " (Mail.)				
10 15 " (Mail.)		10 15 " (Cheap.)	8 55 " (Mail.)	10 15 " (Mail.)					
ON SUNDAYS.		ON SUNDAYS.		ON SUNDAYS.		ON SUNDAYS.			
7 15 a.m. (Cheap.)	2 0 p.m.	7 15 a.m. (Cheap.)	2 0 p.m.	7 15 a.m. (Cheap.)	2 0 p.m.	10 15 a.m. Day Mail	8 55 " Night Mail		
10 15 " (Mail.)	8 55 " (Mail.)	10 15 " (Mail.)	8 55 " (Mail.)	10 15 " (Mail.)	8 55 p.m. (Mail.)				
SHORT TRAINS DOWN, (Calling at Intermediate Stations, as per Train Bill.)									
From Paddington.		From Bath.		From Bristol.					
H. M.		H. M.		H. M.					
For Maidenhead	8 30 a.m.	For Bristol and Exeter	7 15 a.m.	For Taunton and Exeter (Mail) .. 8 0 a.m.					
For ditto	11 0 "	For Bristol	11 0 "	For Taunton and Exeter (Cheap) .. 3 0 p.m.					
For Slough	1 30 p.m.	For ditto	1 0 p.m.						
For Reading	4 0 "	For ditto	3 15 "						
For Maidenhead	5 45 "	For ditto	6 30 "						
For Slough	6 30 "	For ditto	10 0 "						
For Oxford	7 30 "								
ON SUNDAYS.		ON SUNDAYS—LEAVE BATH.		ON SUNDAYS—LEAVE BRISTOL.					
For Slough	8 30 a.m.	For Bristol and Exeter	7 15 a.m.	For Taunton and Exeter (Mail) .. 8 0 a.m.					
For Reading	9 0 "	For Bristol	9 55 "	For Taunton and Exeter (Cheap) .. 3 0 p.m.					
For Slough	9 30 "	For ditto	9 30 p.m.						
For Maidenhead	5 0 p.m.			From Swindon to Bath & Bristol 8 45 a.m.					
For Oxford	7 0 "								
Children under three years of age travel "free" and those under 12 years of age at half-price.									
TIME TABLE.—London Time is kept at all the Stations on the Railway, which is 4 minutes earlier than READING time; 5½ minutes before OXFORD time; 7½ minutes before CHESTER time; 9 minutes before CHESTER time; 11 minutes before BATH and BRISTOL time; and 14 minutes before EXETER time. No tickets will be issued after a Train is in sight at the intermediate Stations. The Royal Hotel at Slough, and Railway Hotel at Reading, are open. Passengers are allowed Ten Minutes' Stoppage at Swindon Junction for Refreshment, both Up and Down.									
Horses and Carriages being at those Stations, which are distinguished by Black Letter Type, ten minutes before the time specified for the departure of any except the "Express Trains," will be conveyed on this Railway. Horses only are conveyed to and from West Drayton.									
POST HORSES are kept in readiness at the principal Stations, and upon sufficient notice being given at Paddington, or at the Bull and Mouth Office, St. Martin's-le-Grand, would be sent to bring Carriages from any part of London to the Station, at a charge of 9s. west of St. Martin's Lane, and 10s. 6d. beyond it, both including Post Boy. Similar notice may be given at Bristol for Carriages to be brought from Clifton or the neighbourhood to the Bristol Station.									
PASSENGERS, PARCELS, &c., from Exeter, Taunton, Bridgewater, Bristol, Bath, and Chippenham, proceeding to Gloucester, Cheltenham, Oxfordshire, &c., may be booked for Gloucester or Oxford, by the Up Trains to the Swindon or Didcot Junctions, proceeding by the Down Trains to those places. In like manner, passengers from Gloucestershire or Oxfordshire, &c., can proceed "West," by coming from Oxford or Gloucester, to the Swindon or Didcot Junctions, and thence by the Down Trains to Chippenham, Bath, Bristol, Bridgewater, Taunton, and Exeter.									
THIRD CLASS PASSENGERS will be conveyed by the Cheap Trains, and 36 lbs. of Luggage allowed for each.									
COACHES run from Exeter to Plymouth, Devonport, Barnstaple, &c., from Taunton to Sidmouth; and from Clevedon Road to Wells, through Axbridge and Cheddar, for 12 o'clock down and 3.15 p.m. up trains; from Bristol to Swansea, Brecon, Hereford, and Carmarthen; from Bath to Frome, Wells, Shepton Mallet, and Glastonbury; from Chippenham to Devizes, Trowbridge at noon, arriving at Southampton at 6.30 p.m.; the Salisbury Mail; and Salisbury and Southampton Coach daily. A Coach runs from Gloucester to Ledbury, per the 10½ Down Train; and Coaches run to Hereford, Ross, Wales, &c. Trains or Coaches run between Gloucester and Cheltenham, to and from every Train Up and Down. A Coach from Swindon to Marlborough, on arrival of the 2 o'clock Down Train; and the "Phoenix" Coach to Marlboro', Pewsey, Uppavon, Armoyn, Salisbury, on Monday, Wednesday, and Friday, 1.10 p.m. and the Salisbury Night Mail from Swindon, through Burghage and Tedworth. From Partridge Road to Fairford; from Tetbury Road to Tetbury, per 10½ a.m. Train; from Tetbury to Henley; from Maidenhead to Marlow and Wycombe at 1.45 p.m.; from West Drayton to Uxbridge; and Windsor Omnibuses meet every Train at Slough.									
Omnibuses start from 29, Gresham-street, Bank, 1 hour before the departure of the Trains, calling at the Peacock, Islington, George and Blue Boar-lan, Holborn; Moore's Green Man and Still, Griffin's Green Man and Still, Oxford Street; Golden Cross, Charing Cross; Chaplin's Universal Office, and Bull and Mouth, Regent Circus; and Gloucester Warehouse, Oxford Street, to the Paddington Station. Fare, Sixpence, without Luggage. Omnibuses leave the Station at Bristol for Clifton Hot-wells, &c., and the Bath Station on the arrival of every Train.									
GOODS and CATTLE are conveyed on the Railway, Particulars of which are stated in separate Bills, and can be had at all the Stations.									
FARES FOR PASSENGERS.									
PADDINGTON to		EXPRESS TRAIN.		First Class.		Second Class.		Third Class.	
First Class.	Second Class.	First Class.	Second Class.	Third Class.	4-wheel.	2-wheel.	Each.	For Fair being same Property.	
Salisbury	1 6	0 9	0 5	0 5	..	..	..	..	..
Hanwell .....	..	..	..	..	..	..	..	..	..
Southall .....	..	..	..	..	..	..	..	..	..
West Drayton .....	..	..	..	..	..	..	..	..	..
Langley Marsh .....	..	..	..	..	..	..	..	..	..
Slough .....	..	..	..	..	..	..	..	..	..
Maidenhead .....	..	..	..	..	..	..	..	..	..
Twyford .....	..	..	..	..	..	..	..	..	..
Reading .....	..	..	..	..	..	..	..	..	..
Pangbourne	8 6	6 0	..	..	..	..	..	..	..
Goring .....	..	..	..	..	..	..	..	..	..
Wallingford Road .....	..	..	..	..	..	..	..	..	..
Didcot	13 0	9 6	..	..	..	..	..	..	..
Abingdon Road .....	..	..	..	..	..	..	..	..	..
OXFORD	15 0	10 0	..	..	..	..	..	..	..
Steventon .....	..	..	..	..	..	..	..	..	..
Wantage Road .....	..	..	..	..	..	..	..	..	..
Farnham Road .....	..	..	..	..	..	..	..	..	..
Swindon	20 0	14 0	..	..	..	..	..	..	..
Porton .....	..	..	..	..	..	..	..	..	..
Minehead .....	..	..	..	..	..	..	..	..	..
CIRENCESTER	24 0	17 6	..	..	..	..	..	..	..
Tetbury Road .....	..	..	..	..	..	..	..	..	..
Brimscombe .....	..	..	..	..	..	..	..	..	..
Stroud	28 6	18 6	..	..	..	..	..	..	..
Stoncliffe .....	..	..	..	..	..	..	..	..	..
Wootton Bassett	28 6	20 0	..	..	..	..	..	..	..
Chippenham	34 6	17 6	..	..	..	..	..	..	..
Cornham .....	..	..	..	..	..	..	..	..	..
BATH	37 6	19 0	..	..	..	..	..	..	..
Tiverton .....	..	..	..	..	..	..	..	..	..
Salford .....	..	..	..	..	..	..	..	..	..
Keynham .....	..	..	..	..	..	..	..	..	..
BRISTOL	30 0	21 0	..	..	..	..	..	..	..
Naish .....	..	..	..	..	..	..	..	..	..
Tyton .....	..	..	..	..	..	..	..	..	..
Clevedon .....	..	..	..	..	..	..	..	..	..
Banwell .....	..	..	..	..	..	..	..	..	..
Weston Super Mare .....	..	..	..	..	..	..	..	..	..
Highbridge .....	..	..	..	..	..	..	..	..	..
Bridgewater	38 0	26 6	..	..	..	..	..	..	..
Taunton	41 0	26 6	..	..	..	..	..	..	..
Wellington .....	..	..	..	..	..	..	..	..	..
Tiverton Road .....	..	..	..	..	..	..	..	..	..
Collumpton .....	..	..	..	..	..	..	..	..	..
Hale .....	..	..	..	..	..	..	..	..	..
EXETER	50 0	34 0	..	..	..	..	..	..	..
Starcross	51 6	35 3	..	..	..	..	..	..	..
Dawlish	52 0	35 3	..	..	..	..	..	..	..
TEIGNMOUTH	52 0	36 0	..	..	..	..	..	..	..
NETWTON	53 6	36 8	..	..	..	..	..	..	..
TOTNESS	54 10	37 9	..	..	..	..	..	..	..
From Bristol to Naish .....	..	..	..	..	..	..	..	..	..
Tyton .....	..	..	..	..	..	..	..	..	..
Clevedon .....	..	..	..	..	..	..	..	..	..
Banwell .....	..	..	..	..	..	..	..	..	..
Weston Super Mare .....	..	..	..	..	..	..	..	..	..
Highbridge .....	..	..	..	..	..	..	..	..	..
Bridgewater .....	..	..	..	..	..	..	..	..	..
Taunton	11 0	7 6	..	..	..	..	..	..	..
Wellington .....	..	..	..	..	..	..	..	..	..
Tiverton Road .....	..	..	..	..	..	..	..	..	..
Collumpton .....	..	..	..	..	..	..	..	..	..
Hale .....	..	..	..	..	..	..	..	..	..
EXETER	90 0	13 0	..	..	..	..	..	..	..

Horses and Carriages cannot under any circumstances be conveyed by the EXPRESS TRAINS.

G.W.R. Timetable and Fare Sheet of 100 Years Ago

UP TRAINS all (excepting the Express Train) calling at Tiverton Road, Taunton, Bridgewater, Chippenham, Swindon, Reading, and Slough Stations, with Branch Trains from Gloucester and Oxford.

From Exeter.	From Bristol, calling at Bath.	From Gloucester.	From Totness.
h. m.	h. m.	h. m.	h. m.
To London (Express)..... 6 30 a.m.	To London and Gloucester..... 7 0 a.m.	To London, Bath, Bristol and Exeter..... 7 0 a.m.	To London..... 6 20 a.m.
To London (Cheap)..... 6 35 "	To London and do. (Cheap Train) 7 40 "	To London, Bath, Bristol and Exeter..... 8 30 "	To London..... 8 20 "
To Bath..... 7 0 "	To London and Gloucester (Mail) 8 35 "	To London, Bath, Bristol and Exeter..... 10 50 "	To London (Express) 10 35 "
To London and Gloucester..... 8 0 "	To London and do. (Cheap Train) 11 0 "	To London (Cheap Train)..... 11 30 "	To Swindon (Cheap) 3 30 p.m.
To London and Gloucester..... 10 0 "	To London and do..... 12 45 p.m.	To London, Bath, Bristol, and Exeter..... 12 55 p.m.	To London (Mail) .. 7 20 "
To London and Gloucester } 12 0 "	To London and do. (Express Train) 1 40 "	To London (Cheap Train)..... 11 30 "	
To London and Gloucester..... 1 0 p.m.	To London..... 6 50 "	To London, Bath, Bristol, and Exeter (Express)..... 1 30 "	
To London and Gloucester } 3 15 "	To London and do..... 6 0 "	To London..... 4 5 "	
To Bristol, Bath and Swindon .. 5 30 "	To London (Mail)..... 11 50 "	To London..... 6 0 "	
To London (Mail)..... 9 0 "	ON SUNDAYS.	To London (Mail)..... 11 40 "	
ON SUNDAYS.	To London (Mail)..... 8 35 a.m.	ON SUNDAYS.	ON SUNDAYS.
To London (Cheap)..... 6 35 a.m.	To London (ditto) (Cheap Train) 11 0 "	To London (Mail)..... 8 30 a.m.	To London (Mail) .. 7 20 p.m.
To Bristol..... 7 0 "	To Swindon, calling at intermediate Stations..... 6 30 "	To London..... 4 5 p.m.	
To Bristol (Day Mail)..... 1 0 p.m.	To London (Mail)..... 11 50 "	To London (Cheap Train) .. 11 30 a.m.	
To do. and Bath..... 5 30 "	Short Trains to Bath at 6.30 a.m., 6.30 p.m.; and at 8.30 p.m.	To London (Mail)..... 11 40 p.m.	
To London (Mail)..... 9 0 "			

SHORT TRAINS UP TO PADDINGTON, (Calling at intermediate Stations.)

ON WEEK DAYS.	h. m.	ON WEEK DAYS.	h. m.	ON WEEK DAYS.	h. m.
From Reading..... 7 30 a.m.		From Oxford..... 7 50 a.m.		From Slough..... 6 30 p.m.	
From Slough..... 9 0 "		From Maidenhead..... 11 15 "		From Maidenhead..... 8 30 "	
ON SUNDAYS.		From do..... 3 0 p.m.		ON SUNDAYS.	
From Slough..... 8 0 a.m.		From Swindon..... 3 45 "		From Maidenhead..... 8 30 p.m.	
From Oxford..... 7 20 "		ON SUNDAYS.		From Reading..... 6 0 "	
		From Slough..... 5 15 p.m.			

FARES FOR PASSENGERS.

TO TRAVEL TO	First Class	Second Class	Third Class	4-wheel.	5-wheel.	Each.	Per Pair being same Property.
NEWTON 1 4	1 1	1 0	0 8	7 0	5 8	5 0	8 0
Tiverton..... 2 4	1 9	2 4	1 9	11 0	8 0	6 0	10 0
Devil's..... 3 10	2 1	2 10	2 1	14 0	7 0	7 0	13 0
Sturges..... 3 4	2 6	3 4	2 6	11 0	8 0	8 0	14 0
EXETER 4 10	3 9	4 10	3 9				
EXETER to							
Hale..... 2 0	1 0	0 8					
Collington..... 3 0	1 6	1 0					
Tiverton Road..... 3 6	2 0	1 2					
Wellington..... 5 6	3 6	1 11					
Taunton..... 7 6	4 6	2 0					
Bridgewater..... 10 0	6 8	3 0					
Highbridge..... 11 6	7 0	4 0					
Weston Super Mare..... 13 0	8 8	4 10					
Bunwell..... 14 6	10 0	5 3					
Yatton..... 15 6	10 8	5 7					
Clevedon..... 16 6	10 10	6 1					
Nailsea..... 17 6	10 12	6 3					
BRISTOL..... 19 0	13 0	7 0					
BATH..... 22 6	14 6	8 0					
CIRENCESTER..... 25 0	16 0	9 0					
GLOUCESTER..... 28 0	18 0	10 0					
OXFORD..... 31 0	20 0	11 0					
PADDINGTON..... 34 0	22 0	12 0					
From BRISTOL to							
Keynsham..... 1 0	0 8	0 5					
Salford..... 1 6	1 0	0 6					
Tiverton..... 2 0	1 3	0 10					
BATH..... 2 6	1 6	0 11					
Box..... 3 6	2 0	1 4					
Corsham..... 4 6	2 6	1 4					
Chippenham..... 6 0	4 0	2 0					
Wootton Bassett..... 8 0	5 6	2 11					
Forton..... 10 0	7 0	3 9					
Minehead..... 10 6	7 6	4 1					
CIRENCESTER..... 11 6	8 6	4 11					
Tisbury Road..... 12 6	8 0	4 7					
Barncombe..... 12 0	7 6	4 3					
Stroud..... 13 0	8 6	5 0					
Stonhouse..... 14 6	9 0	5 8					
GLOUCESTER..... 15 6	9 6	6 0					
Swindon..... 16 0	7 0	6 3					
Shirvenham..... 17 0	7 6	6 9					
Faringdon Road..... 18 0	8 6	7 0					
Wantage Road..... 19 0	9 0	7 6					
Stenton..... 20 0	9 6	8 2					
Didcot..... 21 0	10 6	8 8					
Appleford..... 22 0	11 6	9 4					
Abingdon Road..... 23 0	12 6	10 0					
OXFORD..... 24 0	13 0	10 6					
Wallingford Road..... 25 0	14 0	11 0					
Goring..... 26 0	15 0	11 6					
Fangbourne..... 27 0	16 0	12 0					
Reading..... 28 0	17 0	12 6					
Tyford..... 29 0	18 0	13 0					
Maidenhead..... 30 0	19 0	13 6					
Slough..... 31 0	20 0	14 0					
Langley Marsh..... 32 0	21 0	14 6					
West Drayton..... 33 0	22 0	15 0					
Southall..... 34 0	23 0	15 6					
Hanwell..... 35 0	24 0	16 0					
Baling..... 36 0	25 0	16 6					
PADDINGTON..... 37 0	26 0	17 0					

Passengers in Private Carriages, (not being Servants) are required to take First Class Tickets as the Carriage Rates do not allow for reduced Fares, and such Passengers may change on the journey to the Company's First Class Carriages.

A Station for merchandise is opened at Bull's Bridge, on the Grand Junction Canal, 10½ Miles from London, having Water Carriage to and from the River Docks, the Pool, &c.

PARCELS may be booked at the Railway Offices, 29, Gresham-street, Bank, and Paddington: at the Coach Offices, Spread Eagle, Gracechurch Street, and Regent Circus; Bull and Mouth, St. Martin's-in-the-Grand; Barrow's Head, Snow Hill; Golden Cross, Charing Cross, and Regent Circus; Griffin's Green Man and Still, and Moore's Green Man and Still, Oxford Street; George and Blue Bear, Holborn; the Peacock Islington; Green Man, New Road; Angel Inn, St. Clements; Swan with 2 Necks, Lud Lane; Cross Key, Wood Street; White Horse, Fetter Lane; Habskett's, White Horse Cellar, Piccadilly, for Exeter, Devonport, Plymouth, Bristol, Bath, Bridgewater, Taunton, and Cirencester, and all parts of the West of England, Gloucestershire and Wales, and the Towns and Villages right and left of the Line of Railway, at which places, and all the Stations, they will also be received for Conveyance. Four daily deliveries will be made in London, Oxford, Cheltenham, Cirencester, Bath, Bristol, Bridgewater, Taunton, and Exeter.

First Class Passengers are allowed 112 lbs. of Luggage, and Second and Third Class Passengers 66 lbs. free of charge; all excess is charged for according to distance.

* Carriages and Horses when conveyed by the Cheap Train, will be charged one-third less than this scale, on any part of the Great Western line, and may be paid for on arrival, if required. A Groom to charge of four or more Horses, is allowed to travel free, by either Goods or Passenger Trains.

The Electro-Magnetic Telegraph is in operation between Paddington and Slough, and can be seen daily.

RETURN TICKETS.

NOTICE.—First or Second Class Passengers paying Fare for a Return Ticket will be allowed a reduction of one-third on the double Journey, subject to the following conditions: The Return Ticket is on no account to be transferred to any other Passenger. The Ticket is required to be shown at the end of the first Journey, in order that it may be marked by the Ticket Collector. Upon the return Journey, the passenger must show the Ticket in the Booking-office of the Station, to have it re-stamped by the Clerk, before he enters the carriage, without which it will not be received.

Return Tickets will be available as under:—For any distance not exceeding 50 miles on the same day. But Tickets issued on Saturday, are available for the return Journey on Monday. Exceeding 50 miles and not exceeding 100 miles, on the same or the next day (Sunday not being counted). Exceeding 100 miles, on the same or either of the two next days (Sunday not counted). If the Return Ticket be not used within the prescribed period, it is deemed to be cancelled, and the amount forfeited.

FARES FOR DOGS (each).

For any distance not exceeding 20 miles	s. d.
Ditto ditto 20	0 6
Ditto ditto 100	1 2
Ditto ditto 150	2 0
Ditto ditto 200	2 6
Ditto exceeding 200	3 0

Facsimile of reverse of the Great Western Railway timetable sheet of October 1, 1847, showing fares and conditions (See obverse reproductions on pages 382-3 and editorial article on page 369)

Missenden House : Southern Railway



A corner of the lounge at Missenden House



The dining room at Missenden House, Woking, which was opened for retired Southern Railway employees by Colonel Eric Gore Browne, Chairman, Southern Railway, on September 22. (See page 390 and last week's issue)

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RAILWAY NEWS SECTION

PERSONAL

GENERAL MANAGERSHIP OF THE
SOUTHERN RAILWAY

The Southern Railway has announced that consequent on the appointment of Sir Eustace Missenden, O.B.E., General Manager, Southern Railway, to be Chairman of the Railway Executive, Mr. John Elliot, Deputy General Manager, has from October 1 assumed the duties of General Manager until the company is absorbed in the British Transport Commission.

G.W.R. CHIEF GOODS
MANAGERSHIP

The Great Western Railway announces that, consequent on the appointment of Mr. D. Blee, Chief Goods Manager, to be a member of the Railway Executive, Mr. C. Furber, Deputy Chief Goods Manager & Mineral Manager, will assume the duties of Chief Goods Manager from October 1 until the company is absorbed in the British Transport Commission.

Colonel J. L. Kotalawela has been appointed Minister of Transport & Works in the first Cabinet of Ceylon.

Mr. D. G. Clarke, Secretary to the San Paulo (Brazilian) Railway Co. Ltd., has left England on a visit to the company's representatives in Brazil.

Mr. John H. Beach has been elected Deputy Chairman of the Gloucester Railway Carriage & Wagon Co. Ltd.

Sir Charles Tennyson, Secretary to the Dunlop Rubber Co. Ltd., is Chairman of the newly-formed Committee of British Industrial Interests in Germany.

The late Sir William McLintock, who was Senior Partner of Thomson McLintock & Company, and was a member of the (Weir) Committee on Railway Electrification, 1930-31, left £430,005.

Mr. H. W. A. Waring has been appointed Secretary of Guest Keen Baldwins Iron & Steel Co. Ltd., in succession to Mr. David J. Young, who has been appointed Secretary of the Steel Co. of Wales Ltd.

The Council of the Institute of Transport has elected Mr. Robert Bell, former Assistant General Manager, L.N.E.R., an Honorary Member of the Institute. Mr. Bell retired from the office of Honorary Librarian on September 30 after continuous service therein since 1932, and was an Ordinary Member of Council, 1925-28, and a Vice-President, 1929-32. The Council's election of Mr. Bell as an Honorary Member is in recognition of his outstanding services to the Institute, particularly his work in developing the Institute's examinations and promoting transport education, and the Institute Library, and his contribution of twenty papers to the *Proceedings* of the Institute.

Mr. John Elliot, M.Inst.T., Deputy General Manager of the Southern Railway, who has been appointed to assume the duties of General Manager, Southern Railway, from October 1, was born in 1898, and educated at Marlborough and the Royal Military College, Sandhurst. He was gazetted to the 3rd Hussars in 1917, and was on active service with his regiment in France, Belgium, and on the Rhine until 1920, when he resigned his commission to

In 1935, in company with Sir Eustace Missenden, he visited the United States and Canada to study rail, road, and air conditions in those countries. Air Raid Precautions, both before the 1939-45 war and during it, were largely in his hands, and he played an active part in the organisation of the Southern Railway Home Guard. He is a Lt.-Colonel, Engineer & Railway Staff Corps, R.E., and in August, 1947, was awarded the United States Medal of Freedom with Bronze Palm for his services to the United States Armed Forces during the war. Mr. Elliot was appointed in 1943 to be Chairman of the managing committee of the Railway Research Service, and he is a former Member of the Council of the Institute of Transport. Mr. Elliot is a Director of Air Commerce Limited, British & Foreign Aviation Limited, Devon General Omnibus & Touring Co. Ltd., International Cold Storage & Ice Co. Ltd., Olley Air Services Limited, Southern National Omnibus Co. Ltd., and Southern Vectis Omnibus Co. Ltd.

Mr. W. S. Hall, Assistant General Manager, Vancouver, Canadian Pacific Railway, has retired.

Mr. W. C. Holland, General Manager's Representative (Rates & Commercial), Central Argentine Railway, who has retired, commenced his railway career on the L.N.W.R., with which he remained for some eight years until 1900, when he was engaged for service on the Transvaal and Orange Free State railway systems, then under British military control. He continued his service for some years after those lines had been handed over to civil administration. Mr. Holland proceeded to Buenos Aires in 1908 to join the Central Argentine Railway; after serving for a short time in the Traffic Department, he was transferred to the management, where he held various positions. He was for many years in charge of the Rates & Commercial Office, and in 1938 was appointed General Manager's Representative (Rates & Commercial). In 1937 Mr. Holland attended the International Railway Congress in Paris. During the recent negotiations between the British-owned railways in Argentina and the Argentine Government he acted as adviser on tariff matters to the companies' directors.

Mr. S. Davis, who, as recorded in our September 12 issue, has been appointed Chief Staff Officer, Palestine Railways, started his railway career with the L.N.E.R. in 1924, gaining experience in various clerical and operating capacities in the North Eastern Area, and becoming a traffic apprentice in 1932. From 1937 to 1939 he served as Chief of the Salaried Staff & General Staff Questions Section of the Superintendent's, Passenger Manager's & Locomotive Running Superintendent's Joint Staff Office, Scotland. Mr. Davis



Photo]

Mr. John Elliot

[Lafayette

Who has assumed the duties of General Manager, Southern Railway, from October 1

take up journalism. After experience in America on the *New York Times* and in England on the *Daily Express* and *Evening Standard*, on the latter of which he became Assistant Editor, he joined the Southern Railway in January, 1925, as assistant to Sir Herbert Walker in charge of publicity & advertising. In 1930 he was appointed Development Officer in the newly formed Traffic Department, and was responsible for reorganising the sales and canvassing arrangements of the company. He was appointed Assistant Traffic Manager in 1933, Assistant General Manager in 1937, and in 1939 was appointed Deputy General Manager. He has had long experience in negotiations with Continental railway administrations. He was closely connected with the organisation of the railway operated air services since their inception, and became Chairman of the Great Western & Southern Air Lines Limited, and a Director of ten air line companies associated with the railways, including the very successful Channel Islands Airways.



Mr. W. C. Holland

General Manager's Representative (Rates & Commercial), Central Argentine Railway, 1938-47

joined H.M. Forces in 1939 and served in France; thereafter he was in turn D.A.D.Tn. (Stores), M.E.F.; Docks Superintendent, Piræus; D.A.D.Tn. (Ports), War Office; Officer Commanding, No. 3 Stevedore Battalion, R.E.; and Military Docks Superintendent, Southampton and Port of London, during strikes. In August, 1945, he was seconded to U.N.R.R.A. as Deputy-Director, European Administrative Base, for purposes of reorganisation, and was later Chief Transportation Officer with the U.N.R.R.A. Mission to Czechoslovakia with the rank of Lt.-Colonel. Mr. Davis returned to the L.N.E.R. in January, 1947, as Goods Agent, Waverley, before accepting his present appointment in Palestine.

Mr. J. H. T. Barton, who, as recorded in our August 8 issue, has been appointed Deputy General Manager of the Entre Rios Railways and the Argentine North Eastern Railway, commenced his



Mr. S. Davis

Appointed Chief Staff Officer, Palestine Railways

apprenticeship under Mr. G. J. Churchward at the locomotive works of the Great Western Railway at Swindon in 1903. In 1908 he obtained an appointment with the Buenos Ayres & Pacific Railway as a draughtsman in the Chief Mechanical Engineer's Department at Junin, and in 1910 was transferred to Mendoza as Chief Draughtsman there. When war broke out in 1914 Mr. Barton was at home on leave, and he immediately enlisted in the Royal Gloucestershire Hussars (Yeomanry). He served throughout the war in Egypt, Gallipoli, Palestine and Syria. In 1919 he resumed his duties with the B.A. Pacific Railway as Acting Assistant Locomotive Superintendent at Junin; he was promoted Locomotive Works Manager there in 1921. In 1922 he was appointed Divisional Superintendent of Traction & Workshops at Mendoza, and in 1927 he returned to Junin as Assistant to the Chief Mechanical Engineer. Mr. Barton was appointed



Mr. J. H. T. Barton

Appointed Deputy General Manager, Entre Rios and Argentine North Eastern Railways

Chief Mechanical Engineer of the Entre Rios Railways and the Argentine North Eastern Railway in 1930, and has held that position until taking over his new post of Deputy General Manager.

Mr. E. P. Hardy, who, as announced in our September 12 issue, has been appointed Progress & Planning Engineer, Department of the Chief Mechanical Engineer (Railways), L.P.T.B., was educated at King Edward VI School, Stratford-on-Avon, and was trained in electrical engineering and workshop practice at King's College, London. Entering the service of the London United Tramway Company in 1908, he was appointed Assistant Mechanical Engineer in 1913, and continued as such until 1917, when he was transferred to the London Electric Railways with the post of Assistant for Rolling Stock to the Mechanical Engineer. Mr. Hardy was stationed at Stockwell, on the old City & South London Line, during



Mr. E. P. Hardy

Appointed Progress & Planning Engineer, Department of C.M.E. (Railways), L.P.T.B.



Mr. A. S. Railston

Appointed District Goods Manager, Manchester, L.N.E.R.



Mr. D. S. M. Barrie

Appointed Assistant Advertising & Publicity Officer, L.M.S.R.

the enlargement of the tunnels of that line. In July, 1928, he was appointed Progress Engineer at Acton Works, which post he has held until his present appointment.

Mr. A. S. Railston, Assistant Mineral Manager (Southern Area), L.N.E.R., who, as recorded in our August 22 issue, has been appointed District Goods Manager, Manchester, began his railway career as a junior clerk with the North Eastern Railway at Birtley Station, County Durham, in 1911. Early in that year he was transferred to the District Goods Manager's Office, Newcastle, where he remained until he entered the Royal Navy during the 1914-18 war. He returned to railway service in 1919, and in 1921 he sat for the first competitive examination established by the L.N.E.R. for the selection of traffic apprentices; he was successful, and subsequently underwent a period of special training. Mr. Railston was made Assistant to the Mineral Manager at Doncaster in January, 1940, and he became Assistant Mineral Manager in 1943.

Mr. D. S. M. Barrie, M.B.E., who, as recorded in our September 12 issue, has been appointed Assistant Advertising & Publicity Officer, L.M.S.R., was educated at Tonbridge School, and, after eight years editorial experience with London and provincial newspapers, joined the L.M.S.R. Advertising & Publicity Department in 1932. During the recent war he served with the Royal Engineers, and before demobilisation held the appointment of A.Q.M.G.(M.), H.Q., British Army of the Rhine, with the temporary rank of Lt.-Colonel; he was made an M.B.E. (Military Division) in 1946, and also has been awarded the United States Bronze Star Medal. After his return to L.M.S.R. service, he was appointed, in June, 1946, Assistant (Press & Publicity) to the Advertising & Publicity Officer. Mr. Barrie is a Member of the Institute of Journalists, and is the author of several books on railway and locomotive subjects.

Chief Inspector Partridge, Great Western Railway, who has been responsible during the last twenty years for the trains carrying royalty and other important persons on journeys over the company's system, has retired, after 52 years' service.

MR. G. L. DARBYSHIRE'S MESSAGE TO L.M.S.R. STAFF

Mr. G. L. Darbyshire, who recently was appointed Acting President of the L.M.S.R., has contributed the following message to *Carry On*, the L.M.S.R. staff news magazine:—

You will have heard with pleasure of the appointment to the British Transport Commission of our President, Sir William V. Wood, K.B.E. I have been appointed to act as President of the L.M.S.R., and I want to take this opportunity of sending my good wishes to you all. Today, in common with other industries, we face great difficulties because of world shortages of the essential things we need to replace the ravages of war, but I am encouraged by the knowledge that, in the past, you have overcome difficulties which seemed insurmountable, with the gratifying result that we did not fail the nation at any time. At the end of this year the L.M.S.R. with other railways will pass into national ownership, and from my long association with you I feel I shall not ask in vain for your help in maintaining the highest possible standard of efficiency and public service, so that when the L.M.S.R. becomes part of the nationalised transport system we may take justifiable pride in our achievements.

GOVERNMENT CHANGES

Sir Stafford Cripps has been appointed Minister for Economic Affairs. As a Minister without Portfolio he will give undivided attention to the country's economic problems at home and abroad. A new Ministerial committee on economic planning is being set up, over which the Prime Minister will preside for the time being.

Mr. J. H. Wilson, Secretary for Overseas Trade, has been appointed President of the Board of Trade in succession to Sir Stafford Cripps, and becomes a member of the Cabinet.

Mr. Arthur Greenwood, Minister without Portfolio, has resigned.

Mr. W. M. Neal, Chairman & President of the Canadian Pacific Railway Company, arrives in England tomorrow (October 4), accompanied by Mr. Frederick Bramley, Secretary to the company, Mr. A. C. MacDonald, Assistant to the President, Mr. Grant W. G. McConachie, President & Chief Executive Officer of Canadian Pacific Air Lines, and Mr. H. M. Long, a Montreal manufacturer.

Mr. J. H. Brebner, Chief Public Relations & Publicity Officer, L.P.T.B., has been admitted as a Freeman of the City of London.

PAKISTAN COMMUNICATIONS AND RAILWAY DEPARTMENTS

The Government of Pakistan has appointed the following officers to posts in its Communications and Railway Departments:—

Khan Bahadur Z. H. Khan, formerly of the N.W.R. and recently Member for Staff, Railway Board, India, to be Secretary of Communications.

Mr. D. M. Hambly, formerly Deputy General Manager, and latterly Divisional Superintendent, Karachi, N.W.R., to be Director of Civil Engineering.

Mr. M. J. Chughtai, formerly Director of Establishment, Indian Railway Board, to be Director of Establishment.

Their headquarters are at Karachi, the capital of Pakistan, but they will be responsible for the control not only of the N.W.R. in its reduced form, but also for the Eastern Bengal Railway—the major part of the late Bengal Assam system—of which, it is understood, Mr. F. E. Musgrave has been appointed General Manager.

INDIAN RAILWAY APPOINTMENTS

Mr. K. C. Bakhle, General Manager, Bombay, Baroda & Central India Railway, to be Chief Commissioner of Railways, in place of Colonel R. B. Emerson, who has proceeded on leave preparatory to retirement.

To deal with the problems arising out of the evacuation of refugees, an additional post of Member has been created in the Railway Board, to which Mr. V. Nilakantan, Secretary to the Board, has been appointed.

Mr. F. C. Badhwar to be Member of the Railway Board in Charge of Staff Matters; he was formerly General Manager of the Oudh Tirhut Railway, in which post he was succeeded by Mr. B. B. Varma.

Mr. V. P. Bhandarkar, lately General Manager, Bengal Assam Railway, to be Member of the Railway Board in Charge of Transportation.

Mr. Karnail Singh and Mr. W. Strang have been appointed Transfer Officers at Lahore and Delhi, respectively, to arrange transfers of staff from Pakistan to India and vice versa.

Mr. S. E. L. West, C.S.I., C.I.E., O.B.E., lately a Member of the Indian Railway Board, has been appointed Chief Superintendent of Transportation, Rhodesia Railways, in succession to Mr. J. Hopwood, O.B.E., who has retired.

SOUTHERN RAILWAY STAFF CHANGES

Mr. A. E. Hoare to be Assistant Superintendent of Motive Power.

Mr. G. L. Nicholson to be Assistant Superintendent of Motive Power.

Mr. E. S. Moore, Western Divisional Superintendent of Motive Power, retires.

Mr. R. D. Steele to be Western Divisional Superintendent of Motive Power.

Mr. J. Rodgers to be Assistant Superintendent of Motive Power.

Mr. W. H. Scutt to be Senior Assistant Divisional Superintendent, London West Division.

Mr. H. E. Barber to be Assistant Divisional Superintendent, London East Division.

Mr. W. H. Wood to be Assistant Divisional Superintendent, Southern Division.

SIR EUSTACE MISSENDEN

The following appreciation appears in the September issue of the *Southern Railway Magazine*:—

It was with genuine feelings of pride and pleasure that every member of the Southern Railway staff learnt of the appointment of their General Manager, Sir Eustace Missenden, to be the first Chairman of the Railway Executive of the nationalised railways. To many it was not a surprise, as those who have worked with him realised his great organising capacity. His wide knowledge of railway matters is well known, and he has an international reputation for operating the most intensive suburban service in the world. In a staff magazine such as this, however, it is appropriate to record that no matter how busy and critical were the responsibilities devolving on Sir Eustace in times of war or peace, he has always counted it one of his first duties to lose no opportunity of making direct personal contact with railwaymen of all grades throughout the line.

During the war on many occasions when touring the line to meet all grades of railway men and women who were working daily and nightly during hostile bombing, the train by which he was travelling was held up by "red" warnings. Friendship such as this, begun under danger, has been strengthened in peace by his attendance at flower shows, sports meetings, ambulance meetings and other railway social events.

Sir Eustace is the son of a distinguished Stationmaster and it is particularly gratifying to feel that the first Chairmanship of the Executive of the nationalised railways will be filled by a railway specialist. The friendly team spirit he has engendered in all grades of the staff of the Southern will, it is anticipated, quickly spread under his leadership, and it is certain that every member of the Southern Railway will not only wish him the best of luck in his formidable task but will willingly give him their energetic practical help.

C. G.

Mr. R. J. M. Whibley, of the Churchill Machine Tool Co. Ltd., Manchester, has been awarded the Constantine Gold Medal for his paper on "The Production of Flat Surfaces," read last session before the Manchester Association of Engineers.

At the same time as a party of L.P.T.B. employees are studying transport undertakings in Sweden, 42 members of S.L.F. (the Swedish equivalent of the Road Haulage Association), led by Mr. Cleve Bystrom, head of S.L.F., who are visiting England for a similar purpose, have been inspecting L.P.T.B. depots.

Indian Railways and the Punjab Disturbances

(From a correspondent)

The widespread disturbances throughout the Punjab and neighbouring territories, resulting from the partition of India on August 15, have thrown great burdens on the two new railways into which the old North Western system now has been divided—the Pakistan N.W.R. and Indian Eastern Punjab Railway.

A programme of special personnel and baggage trains had been arranged to transfer those officials of the old Government of India in Delhi, who had elected to serve in Pakistan, to Karachi, the capital of Pakistan, and for several days this programme worked smoothly. Then, however, it was interrupted rudely by the mining, derailment, and subsequent attack on one of these specials while passing through Eastern Punjab. Though trains were diverted immediately by another route and one or two got through without molestation, the whole situation on both sides of the border by this time had got out of hand, and the movement by rail of the Pakistan Government personnel had to be cancelled.

At a later date some members of this staff and their families were sent, however, from Delhi by the Bombay, Baroda and Central India Railway metre-gauge line to Marwar Junction, and thence by the Jodhpur Railway to Hyderabad (Sind), on the N.W.R. main line, over which they completed the journey to Karachi. This arrangement worked well for a time, until the disturbances spread to the Delhi area, when this route also became unsafe. As no land route remained available, the remaining 5,000 officials and their families were flown in 25 aircraft, chartered from B.O.A.C., operating an intensive shuttle service between Delhi and Karachi.

ATTACKS ON TRAINS AND FUEL SHORTAGE

Meanwhile communal disturbances in Lahore seriously affected the attendance of railway staff to their duties, not only because of the danger involved in going to and coming from work, but also due to the natural desire of employees to remain

at home to protect their families and property. The immediate effect was the cancellation of trains for want of crews. Communal trouble also spread to rural areas, where trains were stopped and attacked, and men, women, and children passengers were murdered. An accomplice of the attackers often travelled in an attacked train and pulled the communication cord at the spot where the ambush was laid. As a result, train crews refused to work trains across the border, and still further dislocation of traffic ensued. For a time, all supplies of coal to the Pakistan N.W.R. ceased, as the only normal routes by which they can be received are *via* the new Eastern Punjab Railway. A severely restricted service of passenger and goods trains was introduced forthwith and is still in force, but some coal has been received subsequently, both by rail and by sea, at Karachi: stocks, however, are still dangerously low.

Despite the formation of the military Punjab Boundary Force—since disbanded—whose duties primarily included protection of running trains and station staff on both sides of the boundary, attacks on trains persisted, until finally no train could be run in the boundary area without a military escort. The limited strength of the Boundary Force restricted the numbers of escorts available, and very few trains, therefore, could be run.

Eventually, the whole of the Punjab and the surrounding areas became embroiled, and the mass movements of refugees to and from India began. Many hundreds of railway employees left their posts and fled with their families. More and more trains were attacked, and their passengers, murdered or wounded, were thrown out on the track in many instances. Stations became thronged with refugees, and sanitary arrangements were completely inadequate. At one time pitched battles took place on platforms thus crowded, and the dead lay about for days. Small wonder, therefore, that chaos and cholera resulted.

To complicate matters further, many officers on both sides of the boundary were new to their jobs; Muslims had moved from India to Pakistan, and Hindus from Western Punjab to India. Their lack of local knowledge was in many cases a serious handicap to efficient working.

More recently, however, the position on both sides of the boundary has been brought under better control, and assaults have decreased considerably,* but the railway situation still is far from satisfactory. Replacement of staff that has fled has not materialised from over the border, and shortage of coal and the necessity for train escorts near the boundary are restricting services greatly. Stations have had to be closed for want of staff. As many refugee specials as possible continue to be run from places where, in many instances, tens of thousands of people have collected; and refugees, food, oil, and coal have priority but cannot be moved in the numbers or quantity desired.

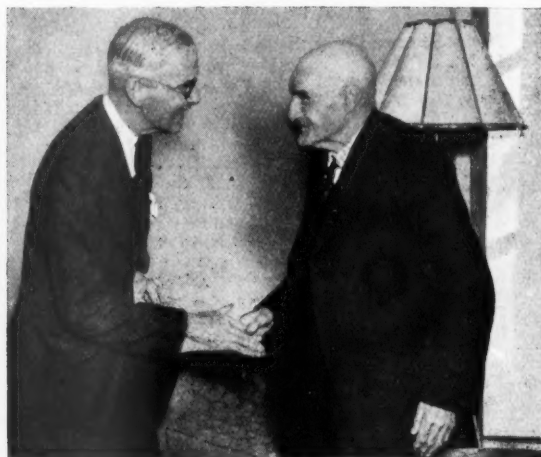
Throughout the disturbances the Karachi-Lahore mails and "Frontier Mails" between Delhi and Rawalpindi have run almost every day, though time-keeping is impossible, partly by reason of out-of-course stops at wayside stations to distribute food and pick up refugees.

In the second week of September the disturbances spread from the Punjab to certain parts of the United Provinces, affecting communications between Delhi and the ports. The G.I.P.R. and B.B. & C.I.R. terminated their services to the North-East at Muttra, and the B.B. & C.I.R. metre-gauge services in and out of Delhi were suspended.

Even when the country has settled down again, the task ahead of the railways will be very great. Their chief difficulties will be to settle in and train new staff, sort out everything, build up balances of stocks of fuel and other materials, and overtake arrears of maintenance, that have accumulated to an alarming extent.

* Since this article was received, an attack on a Moslem refugee train at Amritsar resulted in 3,000 passengers being killed; and 340 Hindus and Sikhs were killed when several thousand Moslems made a reprisal attack on a refugee train at Kanoke, 25 miles from Lahore, on September 24.—Ed., R.G.

Missenden House, Woking, for Southern Railway Retired Employees



The above photographs show (left) Colonel Eric Gore Browne, Chairman, Southern Railway, unveiling the nameplate of Missenden House at Woking, and (right) the Chairman shaking hands with one of the Southern Railway retired employees for whom the home has been provided (see page 386 and last week's issue)

An Electric Mobile Crane for Handling a Variety of Loads

The efficient handling of material depends on having the right appliances for the job, and, although it may be advantageous where only one kind of material is handled to use a single-purpose machine, recognition of the importance of adaptability has led to the development of specialised equipment to suit particular conditions.

For handling a variety of goods efficiently an appliance must have the maximum adaptability, and this requirement can be met adequately by an electric runabout crane capable of lifting a load to any height from a few inches to several feet, and then transporting it and placing it exactly where required without man-handling. The high lift of this type of crane, moreover, facilitates the loading and unloading of railway wagons and road transport vehicles and provides for stacking.

The 10-cwt. Mynne electric mobile crane made by C. H. Johnson (Machinery) Limited, Stockport, Lancs., has been developed specially for such work, and in its design particular attention has been paid to simplicity of operation, safety in working, accessibility for maintenance, and manoeuvrability. The working parts are enclosed by sheet-steel plates fitted with quick-release fasteners.

The unit consists of a jib crane mounted on a 2-ton electrical truck, manufactured by Crompton Parkinson Limited. With a load of 10 cwt., the maximum permissible radius of operation is 9 ft., but the radius increases with lighter loads, and 6 cwt. can be handled at a radius of 13 ft. Safe load and radius indicators are fitted so as to be easily visible from the operating platform. The maximum overall height of the jib is 15 ft. 6 in., and the minimum clearance 6 ft. 9 in., maximum ground to hook height being 13 ft. Speed of hoisting

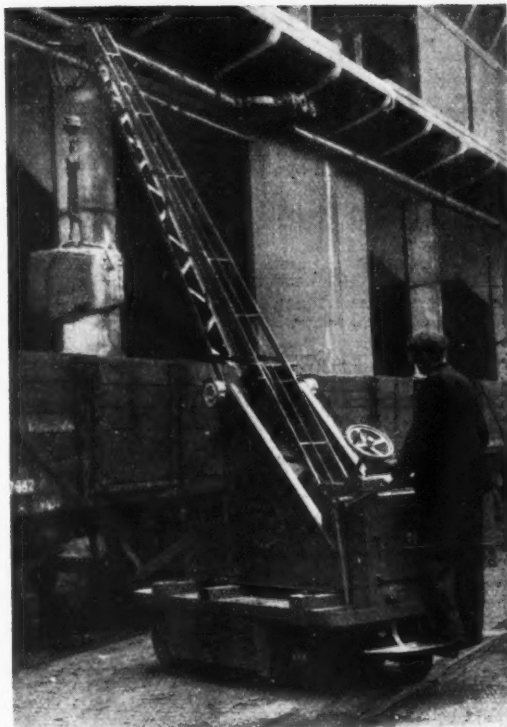
is 60 ft. per minute. The hoisting machinery is enclosed in the carriage.

A 2½-h.p. totally-enclosed motor drives the hoist through a directly-coupled totally-enclosed fan-cooled worm reduction gearbox. An electro-magnetic brake acts on the periphery of the coupling. The drive from the gearbox is through machine-cut spur gears.

Hoisting and lowering are controlled by a reversing drum-type controller with three steps in each direction, and there is a self-resetting circuit-breaker which, should over-winding take place, is tripped by a hoist limit switch. The jib is mounted on pivot bearings and its rear end is fitted with rope sheaves around which the luffing rope is arranged to form a double purchase. A hand-wheel drives the jib luffing drum through a worm gear, and the drum is fitted with pawl and ratchet.

A 320-amp.-hr. battery provides power for both hoist motor and truck motor, and the battery is in two sections, fitted into sliding carriages, with roller-bearing supports, giving immediate accessibility for inspection and servicing.

One full charge of the battery allows for about 10 hours of operation. Another feature of this crane is that it can be



Mynne electric mobile crane

moved quite easily from the truck, allowing the truck to be used separately, and in order to facilitate its removal the hoist motor is connected to the control cubicle through a special withdrawal plug so that no permanent connections have to be undone.

Progress of Central Line Eastern Extension

The seven-mile extension of the Central Line of London Transport from Leytonstone to Woodford and Newbury Park is nearing completion. More than 1,200 men are engaged on the work, which it is hoped to finish about the end of the year. Track-laying has been completed between Leytonstone and Newbury Park, where the line runs through a double-track four-mile tunnel, and workmen are engaged in finishing stations, plastering, tiling, installing escalators, and completing signalling. Between Leytonstone and Woodford, the final touches are being put to the electrification of the existing surface line.

The most distinctive station on the new tube will be Gants Hill. Passengers stepping off at the bottom of the escalators will find themselves in a vast underground hall 50 yd. long, flanked with massive pillars, and with the trains running on each side. There will be no other station in London like it.

It is expected that about 12,000,000 passengers a year will travel on the new extension, which will bring important new travel facilities in the North Ilford, Eastern Avenue, Redbridge, Wanstead, Snaresbrook, and Woodford areas.

Tunnels for the extension were finished early in the war, but instead of laying track in them, an aircraft components factory was

installed there to protect it from enemy air raids. Some 12,000 tons of factory equipment and works have had to be removed before track-laying could begin again.

During peak hours there will be a 3½-4 min. train service both to Woodford and Newbury Park. The extension will add seven more stations to the Underground system—Wanstead, Red Bridge, Gants Hill, Newbury Park, Snaresbrook, South Woodford, and Woodford.

WINTER COAL TRANSPORT EMERGENCY PLANS.—It is estimated that over 2,000,000 tons of coal will be moved by the emergency organisation of the Road Haulage Association from pits in the Midlands during the next six months. Last year, a quantity of 500,000 tons of open-cast coal was carried, but this year, at the request of the Ministry of Transport, arrangements are being made to carry 1,500,000 tons of deep-mined coal in addition. At first, 200 vehicles will be required, and these are being supplied by the East Midland Area of the Road Haulage Association, but additional vehicles to make up a total of 1,500 will be supplied from all parts of the country, including Scotland and Wales. Arrangements are in hand to provide accommodation for drivers. Operators with suitable vehicles are invited to write to the Road Haulage Asso-

ciation, 146, New Bond Street, London, W.1, marking the envelope "Coal" in the top left-hand corner, when further details, including rates, will be sent to them.

PERMANENT WAY INSTITUTION: LONDON SECTION.—A meeting of the Section will be held on October 20 at Denison House, 296, Vauxhall Bridge Road, London, S.W.1, commencing at 6.45 p.m.; at the conclusion of other business, a paper (illustrated) will be given by Mr. H. Ormiston, B.Sc., A.M.I.C.E. (L.N.E.R.), entitled "Flat Bottom Track." In addition, a meeting will be held at North Watford Conservative Club Hall, St. Albans Road, Watford, on October 8, at 6.30 p.m., when a paper (illustrated) will be read by Mr. A. W. Sheldon (Southern Railway), entitled "Relaying by Crane."

NEW G.W.R. GOODS ZONES.—Two new zones, based on Barmouth and Wrexham, were put into operation in the G.W.R. zonal scheme on October 1. The Barmouth zone, covering 450 square miles, has sub-railheads at Dolgelly, Portmadoc, and Pwllheli, and at these four points the work previously handled at 20 stations will be concentrated. Wrexham has sub-railhead at Corwen and Ruabon, together serving 650 square miles; miscellaneous traffic in this zone was handled previously at 30 stations. These two new zones will bring the total in operation to 29, and soon 36 will cover the whole system.

Public Relations on Railways

Daily inquiries range from news of mishaps to crossword-puzzle clues

Mr. George Dow, Press Relations Officer of the L.N.E.R., read a paper on "Public Relations on Railways" to the Stephenson Locomotive Society in London, on September 29, and concluded by showing a selection of slides from the collection of over 22,000 photographs of historic railway interest which has been assembled by the L.N.E.R.

In a definition of public relations, Mr. Dow said that they were "the art of obtaining and maintaining mutual understanding and good relations with the public at large." In an organisation so large and widespread as a railway, the preservation of goodwill with both users and potential users of the services provided played a vitally important part. Indeed, the greater and more complex the organisation from the public point of view, the more urgent was the need for the maintenance of goodwill. That was a never-ending task that ranged from dealing promptly and dexterously with what might appear to a railwayman to be a trivial complaint or suggestion, to the steering of a strangely assorted public towards a sympathetic appreciation of the problems that daily beset a railway undertaking.

THE TOOLS OF PUBLIC RELATIONS

Alphabetically, the first of the tools of public relations was advertising, which could be divided into four kinds, namely, sales advertising, sales-cum-goodwill advertising, goodwill advertising (which was called also institutional or prestige advertising), and propaganda advertising. Sales advertising was self-explanatory and we saw little of it to-day, for, apart from the smaller advertising space available in our skeleton newspapers and the limited paper obtainable for posters, handbills, and pamphlets, the railways had little to sell.

The difference between sales advertising and sales-cum-goodwill advertising could be illustrated by the following example. Suppose the L.N.E.R. had the materials and labour available to replace those rather uncomfortable bucket seats in some of its open coaches by a new type which was all it was claimed to be. It could advertise the new equipment simply as an attraction to secure traffic or it could, in addition, admit that the new equipment replaced a type of seating which never had found much public favour. The first method would be sales advertising and the second sales-cum-goodwill advertising, and Mr. Dow said he believed that the second method would provoke a more favourable public reaction.

IMPORTANCE OF GOODWILL ADVERTISING

The third kind of advertising, goodwill or prestige advertising, was of more interest to a public relations officer. One of the best examples of current prestige advertising, he thought, was the series of "L.M.S.R. In Perspective" posters. He hazarded the guess that more of these would find their way to schools, there to influence the rising generation, than a dozen examples of ruined abbeys.

Propaganda advertising also was much the concern of a public relations officer. Good examples were the pre-war "Square Deal" campaign of the railways and, strangest of all, the wartime propaganda to discourage travel.

The next tool of public relations was contact work. On a railway its possibilities were limitless, for it literally was true that every member of the staff who came in

contact with the public was a public relations officer of the undertaking. Nor must be forgotten those who corresponded with the public on behalf of a railway. The tone of a letter could be reflected so easily in a well-chosen phrase which, unlike the spoken word, would remain as a permanent visual record of sympathetic consideration.

Under the heading of contacts, complaints should be also considered. On the L.N.E.R., for example, public complaints were dealt with by the commercial department concerned, such as the Passenger Manager's or Goods Manager's Department, and sometimes by the divisional general managers or Chief General Manager. Complaints or criticisms appearing in the Press were handled by the Press Relations Officer, in consultation where necessary with the L.N.E.R. department concerned.

The importance of the staff who came into contact with the public had been referred to already. One useful way in which information could be disseminated to the staff was by means of house magazines or news sheets. Departmental magazines were rare, but on the L.N.E.R. the Refreshment Rooms Superintendent produced a monthly four-page news sheet, *R.R. News*. This kept his staff aware of catering progress throughout the system and promoted healthy inter-refreshment room rivalry. When once paper difficulties were eased, there might be further developments of this kind. They would be needed in the years of teething troubles immediately ahead. Mr. Dow hoped to see at least one weekly staff bulletin devoted entirely to current railway developments.

The maintenance of a good business relationship with the Press was of vital importance, and any office set up for that purpose must be prepared to give a 24-hr. information service. Every morning of the week, except Sundays, the three London evening newspapers and the two principal home news agencies telephoned the L.N.E.R. Press Relations Officer to ask if there had been any accidents. Happily, life on a railway did not consist entirely of accidents and other unfortunate occurrences. All developments, big and small, were news to the Press, as a whole, or in certain areas or groups, or individually. Their publication helped very considerably to build and maintain public interest, understanding, and goodwill.

B.B.C. AND FILM COMPANIES

The foregoing considerations also applied broadly to the B.B.C., although, because of the time factor, the amount of news broadcast was very small compared with that published in the Press. With an important railway news item, special facilities, for sound recording for example, might have to be provided. If the subject was pictorial, the photographic news agencies and the film newsreel companies were invited to participate, and here again special facilities might have to be laid on. Bad news, such as an accident, also might be photographed and filmed. On the L.N.E.R. and, he believed, the other railways as well, permission for this to be done was withheld only if the work of rescue and repair was impeded.

The public relations organisation of an undertaking so full of interest as a railway should be prepared to meet and encourage public demands for facilities to visit its property. Visits to locomotive depots were by far the most popular, but quite a

number was paid also to stations, signal boxes, marshalling yards, and locomotive works. At the present time, Mr. Dow's office was arranging about 840 such visits every year, thanks to the co-operation of the various L.N.E.R. departments concerned. The parties averaged 20 strong, and came from railway and locomotive societies, schools and educational bodies, Rotary clubs, and other public groups.

The Press Relations Officer had to deal daily with a considerable volume of requests for information from the Press and other bodies disseminating news. The inquiries handled now totalled about 1,800 a year, a few of them involving some research, and a number of others requiring information, always willingly given, from other departments of the railway.

The variety of the questions gave a very real indication of the wide interest the public took in railways. One of the most unusual came from a very young enthusiast who sent in a competition crossword and asked them to solve the railway clue in 18 across. Fortunately for the prestige of the L.N.E.R., they were able to do so.

REFERENCE LIBRARY AND PHOTOGRAPHS

The vital importance of adequate records or, to coin a phrase, "information availability," in public relations work could not be overestimated. Mr. Dow quoted the following examples from a typical day's correspondence: three letters from journalists asking questions about the "Yorkshire Pullman," the steamship *Arrhem*, and vandalism in rolling stock; one from a novelist needing historical railway details; another from a modeller who wanted certain locomotive dimensions; a pageant master asking what porters' uniforms looked like in 1860, and *The Railway Magazine* seeking data about an obscure branch of the old North British.

The Press Relations Officer therefore possessed a first class railway reference library, and its correspondence filing system was designed so as to act as a source of information. Best of all, however, were its photographic records, which contained over 22,000 prints, exclusive of duplicates, these covering many phases of railway activity and development both on the L.N.E.R. and its predecessors.

With the duties of the Press Relations Officer they should, by now, be familiar. From an organisational point of view, however, his function was not only an all-line one, with regional assistants at Manchester, York, and Edinburgh, but his office actually was a section of the Chief General Manager's office. Furthermore, and very important from the Press point of view, he had direct access to divisional headquarters, departments, and districts throughout the system.

It would be an exceptionally well-informed railwayman indeed who could, at the present moment, give an accurate forecast of the shape of things to come. It would seem from the remit of the British Transport Commission that there was a very real danger that the pattern of the Coal Board might be followed by the railways. If this was indeed to be the case, then Mr. Dow hoped the Railway Executive would avoid one cardinal error on the part of the Coal Board. They must set up their public relations organisation quickly, and not months after the change-over. He did not think there would be disagreement with his plea that the whole of the personnel of such an organisation should be recruited from the present tried (and sometimes very tried) public relations departments of the railways.

Notes and News

Shunters Required.—Shunters, between 21 and 30 years of age, are required by the Rhodesia Railways. See Official Notices on page 395.

Works Manager Required.—A works manager is required by the Iraqi State Railways for three years in the first instance. Candidates must be A.M.I.Mech.E., or hold an engineering degree, and have had first class experience as a railway works manager. See Official Notices on page 395.

Signal Draughtsman Required.—A signal draughtsman, 25 to 30 years of age, is required by Coras Iompair Eireann. Candidates must have had experience with mechanical and electrical signalling, including preparation of interlocking diagrams and wiring circuits. See Official Notices on page 395.

Superintendent of Works Required.—A superintendent of works, between 25 and 35 years of age, is required by the Sudan Railways. Duties include the supervision of building construction and the maintenance, including brickwork and reinforced concrete, of houses, offices, warehouses, and all kinds of railway buildings. See Official Notices on page 395.

Cross-Channel Ships and Services.—Mr. J. L. Harrington, General Assistant to the General Manager, Southern Railway, will give a lecture on "Cross-Channel Ships and Services" to the Southern Railway Lecture & Debating Society at the Chapter House, S.E.1. at 5.45 p.m. on Thursday, October 9. The chair will be taken by Sir Eustace Missenden, O.B.E.

Through Rail Booking and Green Line Charges on London Transport.—Following Statutory Rule & Order, 1947, No. 2012, by the Minister of Transport, authorising an increase in main-line (but not London Transport) railway ordinary and workmen's fares and season ticket rates, London Transport announces that charges from the board's stations to main-line stations will be increased in respect of that part of the journey over the main lines. Through season ticket rates which include availability over a main line have been increased

as from October 1, and through ordinary and workmen's fares in the same category from the board's stations will be increased as from November 1. Green Line coach charges have been increased as from October 1, following Statutory Rule & Order, 1947, No. 2015, by the Minister of Transport increasing these charges to maintain comparability with the main lines.

Organisation of Large Undertakings.—On November 10, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, Mr. F. A. Pope, Vice-President, London Midland & Scottish Railway, will read a paper to the Institute of Transport entitled "Principles of Organisation for Large Undertakings."

Buffer Stop Collision at Liverpool Street, L.N.E.R.—A train from Ipswich to London ran into the buffers at Liverpool Street Station at 9.15 a.m. on September 18. Many passengers were getting up in readiness to alight when the impact occurred, and some were thrown across compartments, or jolted out of the open carriage doors on to the platform. There were no serious injuries, although 11 out of the 20 passengers who received first-aid treatment from the station staff were taken to hospital.

Increase in Exports to Hard Currency Areas.—As a result of the survey being carried out by Mr. A. G. Noble, General Manager, Latin American Sales, B.E.S.T.E.C., an increase in sales to hard currency areas is reported. Although the suspension of sterling convertibility may have a temporary effect on all sales to these areas, B.E.S.T.E.C. is confident that, once trading conditions grow easier, the sales and servicing organisation set up by the Group is equipped to meet all competition in the Latin American market.

Presentation to the Institute of Transport.—At the final meeting of the Council of the Institute of Transport for the current session, votes of thanks were accorded to these members who retired from the Council on September 30. The retirements included Mr. G. S. Szlumper, a Past-President and Chairman of the Examinations Committee, and he asked the Council's

acceptance of a gavel and stand, which had been fashioned from oak salvaged from the roof of the City of London Guildhall, after it was destroyed by enemy action in 1940. The inscription on the stand states that it has been presented "as a token of goodwill and to commemorate an aggregate of eighteen years' service on the Council."

British Transport Commission.—The British Transport Commission is inviting applications for the positions of Deputy Secretary to the Commission, not less than three Assistant Secretaries, and not more than four Senior Secretarial Assistants. For details, see Official Notices, page 395.

Bailey Bridge Award Free of Tax.—Sir Donald Bailey has received a cheque for £5,400 from the Inland Revenue as a refund of the income-tax which was deducted from the grant of £12,000 made to him by the Royal Commission on Awards for his invention of the Bailey bridge.

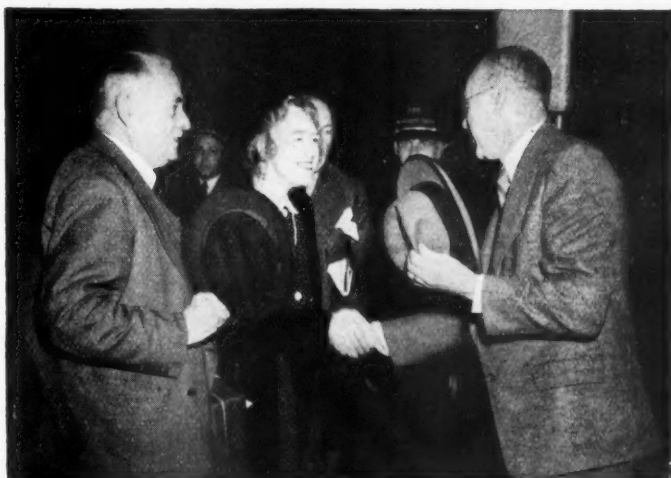
Permanent Way Institution Visit to Taylor Brothers (Sandiacre) Limited.—On Saturday, September 27, members of the Croydon Section of the Permanent Way Institution were the guests of Taylor Bros. (Sandiacre) Limited, at their works at Sandiacre, near Nottingham. The visitors were afforded an opportunity of inspecting the manufacture and pre-assembly of point-and-crossing work in all its stages. Of particular interest were complicated layouts of flat-bottom track for the main lines of the L.M.S.R. and L.N.E.R.

World Engineering Conference.—Delegates from 25 countries attended the first council meeting of the World Engineering Conference, which was held from September 9-11 in Zurich, when, on the motion of Lord Sempill, it was decided to establish two permanent committees, one to study in collaboration with U.N.E.S.C.O. the effects of technological developments on social and international relations, and the other to examine the effects of power production in the world today. These two studies will represent one of the main features of the work of the council during the coming twelve months. It was decided, also, to hold the next World Technical Congress in Cairo in March, 1949.

Higher Railway Charges.—Four Statutory Rules & Orders have been issued by the Stationery Office, price 1d. each, relating to the increase in charges, as from October 1, on the main-line railways, the railway-owned harbours, docks, and piers, and the London Passenger Transport Board. They are No. 2012, The Railways (Additional Charges) Order, 1947; No. 2013, The Railways (Additional Charges) (No. 2) Order, 1947; No. 2014, The Railway-Owned Harbours, Docks and Piers (Increase of Charges) Order, 1947; and The London Passenger Transport Board (Additional Charges) (Amendment) Order, 1947. All were made by the Minister of Transport and dated September 15, 1947.

Doncaster, L.N.E.R., Collision Inquiry.—The inquiry into the collision outside Doncaster Central Station, L.N.E.R., on August 9 (see our August 15 issue), was concluded at Liverpool Street Station on September 25. Evidence was given by the signalman at Balby Junction box that it was his practice to reset the down main to the down goods line, in order to minimise delay to trains following each other. He estimated that he carried out this movement 30 or 40 times in a single shift, and did not agree with the suggestion by the inspecting officer, Brigadier Langley, that he did so only when a preceding train had stopped at Bridge Junction. Later, the

Sir Robert Burrows in Canada



Sir Robert Burrows, Chairman, L.M.S.R., and Lady Burrows, welcomed by Mr. William Manson, Vice-President, Canadian Pacific Railway, on arriving at Windsor, Ontario, on September 18. Sir Robert Burrows arrived in New York on September 16, and afterwards made a tour of Canada, travelling as far as Vancouver, with stops at Banff and Sicamous.

signalman agreed that he might have over-estimated the number of trains diverted in this way. He said, also, that his box on the day of the accident was hot and stuffy, and thought this might have affected him.

Douglas Tractor Trucks.—A fleet of eight tractor trucks has been completed recently by Douglas (Kingswood) Limited, Bristol, for delivery to the General Post Office. In this case, the truck used is a short chassis model with a 3 ft. 6½ in. wheelbase and capable of towing 2 tons, and fitted with 6-volt lighting and other equipment to G.P.O. specification. Another Douglas model, known as the High-Lift truck and stillage system, was described and illustrated in our issue of September 6, 1946.

Silentbloc Limited.—The Chairman of Silentbloc Limited, Mr. H. Vezey Strong, said, at the company's recent annual general meeting, that there had been considerable expansion of activities in the year under review. Silentbloc Limited had acquired a freehold property within a mile of its present location, which would permit business to be expanded and make for still greater efficiency of production. The company's subsidiary, the André Rubber Company, had purchased outright from the Government all the buildings and machinery erected and installed during the war. As a result of these transactions the company was well placed to cope with the immediate requirements of the post-war period, which were tending to become rather overwhelming in their scope.

Railway Benevolent Institution.—A flag day held on the Southern Railway system on September 18 in aid of the Railway Benevolent Institution fetched the sum of £4,756. At a ceremony on September 26, Sir Eustace Missenden, then General Manager, Southern Railway, and now Chairman of the Railway Executive under the British Transport Commission, presented Mr. J. C. Mitchell, Deputy Chairman of the Institution, with a cheque for that amount. Mr. Mitchell, replying, thanked Sir Eustace Missenden and the entire Southern Railway staff for a very substantial sum, which would assist materially in their work for necessitous

railwaymen and their families. Mr. H. C. Walton, Secretary of the Institution, expressed sincere appreciation of the efforts made by Mr. J. H. Chitty, Welfare Officer, Southern Railway, and other helpers, which had assured the success of the collection. Below is reproduced a photograph of the ceremony on September 26.

Liverpool Overhead Railway.—The traffic return of the Liverpool Overhead Railway for the 9 months to September 28 shows a decrease of £6,480 in total receipts compared with the preceding year, the aggregate this year being £110,568, as against £117,048 in 1946. Receipts for the week ended September 28 this year, at £2,598, were £483 below the corresponding week of 1946.

Radio Telephones for G.W.R. Dock, Swansea.—The G.W.R. has installed at the King's Dock entrance, Swansea, a Marconi radio telephone operating on a frequency of 67-675 Mc/S., with a power of 25 watts and an effective range of 25 to 30 miles. This will permit of two-way communication with the pilot cutter, *Roger Beck*, similarly equipped by the Swansea Pilotage Authority. The apparatus will be of considerable advantage in connection with the safe and speedy handling of shipping at Swansea Docks, as the Dock Master's staff is now in direct touch with the pilot cutter during tide time when the latter is on stations in the Mumbles roadstead, and when visibility is limited owing to fog or rain. A similar Marconi mobile V.H.F. installation was described and illustrated in our August 15 issue.

Golden Jubilee of Accumulator Firm.—Towards the end of the last century, when small power stations were being started throughout the country, the electric battery carried the load during the night and early hours of the morning, thus enabling the plant to be shut down. In these developments the Tudor Accumulator Co. Ltd., 50, Grosvenor Gardens, London, S.W.1, played an important part, from the time of its formation in 1897. This firm instituted a system of contract whereby electric light plants were installed in institutions and private houses and main-

tained by them regularly. Later, attention was directed to the transport industry, and in 1912 a fleet of buses in London operating between Liverpool Street and Victoria Station was run entirely on Tudor batteries. At the present time, the company supplies accumulators for all kinds of transport work, including shunting locomotives, cranes, road vehicles, etc.

Winding up of E.C.I.T.O.—A meeting of the Council of E.C.I.T.O. (European Central Inland Transport Organisation)

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices	
			Sept. 30, 1947	Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	53½	+ ½
5% Con. Pref.	126½	107	113½	+ 1
5% Red. Pref. (1950) ..	106½	102½	98½	—
5% Rt. Charge	140½	122½	126½	+ 1
5% Cons. Guar.	137½	118½	124½	+ 1
4% Deb.	129½	106	118	+ 1
4½% Deb.	129½	107	118	+ 1
4½% Deb.	130½	114	119½	+ 1
5% Deb.	142½	125	130½	—
2½% Deb.	95½	81½	88½	—
L.M.S.R.				
Ord.	30½	26½	27	+ ½
4% Pref. (1923)	64	52½	56½	+ 1
4% Pref.	86	75½	77	+ ½
5% Red. Pref. (1955) ..	105½	97	95½	—
4% Guar.	108½	100	97½	+ ½
4% Deb.	120	103	108½	+ ½
5% Red. Deb. (1952) ..	108½	105½	101½	—
L.N.E.R.				
5% Pref. Ord.	7	5	6½	—
Def. Ord.	3½	2½	3½	—
4% First Pref.	59½	50½	52	+ 1
4% Second Pref.	29½	25½	27	+ 1
5% Red. Pref. (1955) ..	104	97	93½	—
4% First Guar.	107	98	96½	+ 1
4% Second Guar.	101	90	90½	+ 1
3% Deb.	104	87½	94	+ 1
4% Deb.	119½	102½	108	+ 1
4½% Sinking Fund Red. Deb.	107½	101½	98½	—
SOUTHERN				
Pref. Ord.	79½	70	69½	+ ½
Def. Ord.	24	19½	22½	+ 1
5% Pref.	125½	107	112½	+ 1
5% Red. Pref. (1964) ..	115½	106½	104½	—
5% Guar. Pref.	137½	119	124½	+ 1
5% Red. Guar. Pref. (1957)	115½	107½	104½	+ 1
4% Deb.	129½	105½	118	+ 1
5% Deb.	139½	125½	127½	—
4% Red. Deb. (1962- 67)	113½	104½	104½	+ 2
4% Red. Deb. (1970- 80)	115½	104½	104½	—
FORTH BRIDGE				
4% Deb.	109	103	98½	—
4% Guar.	105	102	94½	—
L.P.T.B.				
4½% "A"	133½	120½	121½	+ 1
5% "A"	142½	130½	129½	+ 1
3% Guar. (1967-72) ..	108	98½	95½	— ½
5% "B"	128½	117½	116½	—
"C"	64½	56½	59½	—
MERSEY				
Ord.	34	30	32½	—
3% Perp. Pref.	76	69	67½	— 1
4% Perp. Deb.	117½	103	106	—
3% Perp. Deb.	98	81	88½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41½	30½	26½	— ½
Pref.	63½	52	42½	—
Guar.	97½	78½	72	—
Deb.	107	97½	95	—
IRISH TRANSPORT				
Common	19½	16½	13½	— 6
3% Deb.	107	100	101	—

* Latest available quotation

Presentation to Railway Benevolent Institution



Sir Eustace Missenden, then General Manager, Southern Railway, and now Chairman of the Railway Executive under the British Transport Commission, presenting a cheque, the proceeds of a Southern Railway flag day, to Mr. J. C. Mitchell, Deputy Chairman, Railway Benevolent Institution. Those present on this occasion, referred to in a paragraph above, were (left to right) Mr. J. H. Chitty, Welfare Officer, Mr. F. Gilbert, Deputy Chief Officer for Labour & Establishment, Mr. H. C. Walton, Mr. R. M. T. Richards, Traffic Manager, Sir Eustace Missenden, Mr. J. Lithgow, Social Welfare Supervisor, Mr. J. C. Mitchell, Miss E. Cooper, Mr. R. E. Goodman, Welfare Office, and Mr. B. Webb, Editor, "Southern Railway Magazine"

OFFICIAL NOTICES

Government of Iraq

APPLICATIONS from qualified candidates are invited for the following post:—
WORKS MANAGER required by Iraqi State Railways for three years in the first instance. Salary Iraq Dinars 120/130 a month according to qualifications and experience. Cost-of-living allowance I.D. 24 a month (I.D. 1 = £1). Free passages, provident fund. Candidates must be A.M.I.Mech.E. or hold engineering degree and have had first class experience as a Railway Works Manager. They must have a full knowledge of jigs and tool fixtures and of the speeds and feeds of machine tools, and be capable of introducing the most up-to-date methods of production and progress planning. A knowledge of diesel locomotives is desirable. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1. quoting M/N/12840 on both letter and envelope.

Sudan Railways

SUDAN RAILWAYS require a Superintendent of Works for service in the Sudan. Duties include the supervision of building construction and the maintenance, including brickwork and reinforced concrete, of houses, offices, warehouses, and all kinds of railway buildings. Applicants should have served an apprenticeship to one of the building trades or should have had technical school training, and must have had at least two years' supervisory experience on building works. A knowledge of harbour and marine work would be an advantage. Age 25-35. Starting rate according to age, qualification and experience, and followed by periodic increments, in the scale £300-£780. Subject to two years' probation, this contractual period envisaged is ten years, on completion of which a gratuity of £1,900 is payable. Cost-of-living allowance at 45 per cent. of salary, subject to maximum of £225. Outfit allowance £40 if starting rate does not exceed £600. There is at present no income tax in the Sudan. Strict medical examination. Further particulars and Application Form from SUDAN AGENT in LONDON, Wellington House, Buckingham Gate, London, S.W.1. Please mark envelope "Superintendent of Works."

FIFTY YEARS OF RAILWAY LIFE IN ENGLAND AND SCOTLAND. By Joseph Tatlow. Cloth, 8½ in. by 7 in. 223 pp. Illustrated. 10s. By post 10s. 7d.

was held in Paris on September 29 to terminate officially the functions of the organisation. It was stated that the Soviet Union still owed E.C.I.T.O. £88,992. Poland was £12,947 in arrears, but the Polish delegate stated that an instalment of £5,000 was on the way and that the rest would be paid as soon as possible. Jugoslavia was stated to owe £3,536, and there were no delegates present either from that country or the Soviet Union to say when the sums owing would be paid. The Council now has to find a way of paying outstanding liabilities which include £20,000 to the staff, £11,000 to the British Government, and £10,000 to the French Government. The economic difficulties of E.C.I.T.O. as a result of arrears in the contributions from certain countries were the subject of an editorial article in our September 12 issue.

Charles Roberts & Co. Ltd.—A statement by Mr. Duncan Bailey, Chairman of Charles Roberts & Co. Ltd., which was circulated with the report and accounts at the recent annual meeting, showed that the trading profit of the group amounted to £540,254, an increase of £63,918. This was a fine example of what could be done by private enterprise, hampered though they were at almost every turn. The company's order book, both for railway vehicles at home and abroad, and for coachwork, was full and likely to remain so for a considerable time. The Chairman said that they frequently had to turn away work offered by old friends and customers, and that some valuable contracts from overseas were being placed abroad because they could not promise early delivery. He saw no reason why they should

The British Transport Commission

THE British Transport Commission invite applications for the following appointments:—

(1) DEPUTY SECRETARY TO THE COMMISSION

For this post knowledge and experience of inland transport problems and organisation is essential, with administrative ability and initiative. The holder of the post must be able to deputise for the Chief Secretary whenever necessary and, under his supervision, would have general responsibility for the administration of the secretarial and administrative side of the Commission's Office. He will be required to deal with policy problems but not with questions of day-to-day management and operation of the various sections of the Commission's undertaking. Salary approximating to £2,750 per annum, in accordance with qualifications and experience.

(2) ASSISTANT SECRETARIES

It is anticipated there will be not less than three vacancies for Assistant Secretaries on the staff of the Commission. An Assistant Secretary will work under the direction of the Chief Secretary and the Deputy Secretary and will have administrative responsibility for an administrative section in the Office of the Commission. For these posts men with knowledge and experience of railway, road transport, docks and inland waterways, and staff problems respectively are likely to be required. Salary approximating to £1,750, in accordance with qualifications and experience.

(3) SENIOR SECRETARIAL ASSISTANTS

Men with knowledge and experience of inland transport problems and organisation will be required for these posts, with administrative ability and initiative. Not more than four such Assistants will be required at the present time, but any applicants will be considered for later appointments as the organisation of the Commission develops. Age not over 45; commencing salary £1,250.

The holders of all the above posts, if not already participants in a superannuation scheme at present administered by the bodies to be merged in the undertaking of the Commission, will be required to become participants in the future superannuation scheme of the Commission and their salaries will accordingly be subject to superannuation contribution.

All applications for such posts, with full details of each applicant's age, qualifications and experience, and names of two referees, to reach the Chief Secretary, BRITISH TRANSPORT COMMISSION, 55 Broadway, Westminster, London, S.W.1, not later than October 15, 1947.

not continue to earn those reasonable profits which should be the reward of enterprise and efficiency. Any attempt to restrict reasonable and legitimate profits, which were the wages of efficiency in industry in general, usually led to slackness and extravagance.

G.W.R. (London) Dramatic Society.

The G.W.R. (London) Dramatic Society is presenting "The Barretts of Wimpole Street," Rudolph Besier's famous play about Elizabeth and Robert Browning, at the Park Theatre, Hanwell, from October 8 to 11, and at the Scala Theatre, London, on October 14. The part of the stern Victorian father will be played by Mr. A. Griffiths, a clerk, and his wife will appear as his stage daughter, Elizabeth Barrett; Mr. R. Curry, a draughtsman in the Chief Engineer's Office, is to play the part of Robert Browning. This will be the silver jubilee production of the Society, which is regarded as being among the first 20 of the 4,000 amateur dramatic societies in the country; the original costumes used in the 1930 Malvern Festival performance will be worn.

L.M.S.R. to Extend Zonal Goods Scheme.—Zonal collection and delivery schemes, linking outlying areas and stations to large central goods depots by fast motor lorry services, are to be augmented by the L.M.S.R. in order to speed the movement of small consignments of goods traffic. More than 400 stations are served already by zonal schemes, and motor lorry services are in operation from 69 L.M.S.R. goods depots. The lorries call on manufacturers and traders, and collect or deliver direct within a 10-mile radius of the zonal depot. The zonal

Coras Iompair Eireann

APPLICATIONS are invited for the following position:—

Fully qualified **SIGNAL DRAUGHTSMAN**, aged 25 to 30 years, with experience of mechanical and electrical signalling, including preparation of interlocking diagrams and wiring circuits.

The successful applicant will be required to pass a medical examination. Applications, stating age and giving details of training, experience and present employment, should be addressed to the

SIGNAL & TELEGRAPH SUPERINTENDENT,
 CORAS IOMPAIR EIREANN,
 BROADSTONE,
 DUBLIN, EIRE.

STEEL STRUCTURES purchased, dismantled and removed. Industrial steel structures re-built, re-roofed and renovated. Steel factory buildings dismantled, re-erected or adapted on other sites.—**BELLMAN HANGARS LIMITED**, Terminal House, Grosvenor Gardens, London, S.W.1. Sloane 5259.

A CLIENT of Business Brokers Limited, 46, St. James's Place, London, S.W.1 (REGENT 4720 & 5418), desires to purchase Manufacturing Business with good percentage export sales, situate London or Home Counties. Price about £50,000. Early appointment with Principals' Solicitors or Accountants invited.

VACANCIES are available on the Rhodesia Railways for Shunters. Applicants must be single men between the ages of 21 and 30 and of good physique. Commencing wage 21s. 7d. per day, plus temporary cost-of-living allowance, at present 21 per cent.

Apply in writing to the Secretary, Rhodesia Railways Limited, 11, Old Jewry, London, E.C.2., submitting full name, age, and particulars of experience.

RAILWAY AMALGAMATION IN GREAT BRITAIN. By W. E. Simmet. An authoritative account of the course of railway amalgamation in Great Britain up to the end of 1923. Cloth, 8½ in. by 5½ in. 276 pp. 15s. By post 15s. 7d.

A NATIONAL TRANSPORT PROGRAMME. With foreword by Sir James Milne. Outlines the approach of a long-term plan for transport, covering State and private ownership, track, costs, etc. Paper, 8½ in. by 5½ in. 27 pp. 1s. By post 1s. 2d.

service minimises the handling and movement by rail of goods in less-than-wagon loads at local stations. An article describing the company's zonal arrangements appeared in *The Railway Gazette* of January 24.

Forthcoming Meetings

October 7 (Tue.).—The Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1. 6 p.m. "High Speed C.I. Engines." Discussion on some notes on the design, development, and production of high-speed compression-ignition engines, by Mr. S. Markland, O.B.E., M.I.Mech.E., and Mr. N. Tattersall, M.I.Mech.E.

October 8 (Wed.).—The Permanent Way Institution (London Section), at Watford, "Relaying by Crane," by Mr. A. W. Sheldon, Southern Railway.

October 9 (Thu.).—The Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1. 5.30 p.m. "Bogies and Pony Trucks: their Behaviour on the Locomotive and the Track," by Mr. J. C. Loach, Associate Member.

October 11 (Sat.).—The Permanent Way Institution (Manchester & Liverpool Section), at Preston, "Repairs to and Erection of Girder Bridges" (Lantern Lecture), by Mr. H. Wyles, A.M.Inst.C.E., A.M.I.Struct.E., of Newton Heath.

Railway Stock Market

British Funds and home rails have provided good features in generally quiet and uncertain stock markets, where industrials, although firm, attracted very little demand, the tendency still being to await the decision regarding an autumn Budget. To some extent the uncertainty surrounding industrial shares has diverted buying interest to British Funds, which again responded readily to moderate demand, partly because of the assumption in some quarters that official support for gilt-edged may be in prospect. There has been selective demand for industrial shares, with the export sections again favoured, although it is being suggested that for the time being the rise in most shares in this category has gone far enough; because, although there is obvious scope for big dividend increases, in many cases this will, in fact, turn on whether the Profits Tax is increased or some new device to limit dividends brought forward by the Government.

Iron and steels remained in favour, buyers being attracted by the good yields and the expectation that dividends will be maintained. The increase in steel output, according to some views, may show such encouraging expansion over the next six months or so that it will be difficult for the Government to make out a case for transferring the industry from private hands; but it is realised that, as in most other spheres, more immediate output prospects turn on the fuel position. United Steel have been active around 26s. in anticipation of the dividend. Dorman Long were 25s., Colvilles 25s. 9d., and Tube Investments were good at £6½, and Stewarts and Lloyds moved up to 52s. 6d. Charles Roberts rose to £6½, Gloucester

Wagon were higher at 58s. 9d., with Beyer Peacock active around 22s. 7½d., and Vulcan Foundry changed hands up to 30s.

Home rails have been helped by a variety of factors. In the first place there is wider recognition that Mr. Dalton is unlikely to aim at stimulating a sharp rise in British Funds with the sole object of bringing down the yield on British Funds to 2½ per cent., so that interest on British Transport stock could be limited to this rate.

Moreover, sentiment also had the benefit of an official denial that the exchange from home rails into British Transport stock would be deferred from January 1 next to some later date. There are known to be large accumulations of money awaiting investment, and they have been swollen this week by the £20 millions repayment in respect of 4½ per cent. Rhodesia Railways debentures; while later on share-out moneys in respect of Argentine railway prior charges should also become available.

In the circumstances a strong case can be made out for the probability that the rally in British Funds may very well continue over the next few months; and just as it seems reasonable to assume that the interest rate on British Transport stock hardly can be as low as 2½ per cent., it cannot be taken for granted that it will necessarily be 3 per cent. Meanwhile, wider attention drawn to the obvious attractions of home rails as a short-term investment with scope for appreciation has brought in better demand from the public, and prices have moved moderately higher as a result. Nevertheless, at the moment home rails seem chary of moving strongly towards take-over levels despite

indications that the market is none too well supplied with stock, particularly in regard to various of the prior charges.

Reflecting the better tendency, Great Western ordinary has strengthened to 52½, but is still well below the take-over price of 59½. L.M.S.R. ordinary is now 27 (take-over 29½), and the senior preference improved to 76½ and the 1923 preference to 56½. Moreover, L.N.E.R. first preference improved to 52, comparing with the take-over price of 58½. Southern preferred was also better at 69½. In the latter case the take-over is 77½.

The foreign railway market has been much less active. Argentine rails tending to ease pending further news from Buenos Aires regarding progress of the U.K.-Argentine currency talks. The City view is that the railway scheme is likely to be ratified according to schedule, but prices of the various stocks still continue to be well below share-out levels, including the prior charges which will be paid off in November if all goes according to plan. Central Uruguay stocks were less active and reflected profit-taking.

Moreover, Brazilian rails also turned dull after an earlier improvement. San Paulo being 152, awaiting the outcome of the visit of the company's secretary to Brazil.

News of the completion of the purchase of the Mexican Railway Company by the Mexican Government was followed by improvement in the 6 per cent. debentures to 81. In other directions. Antofagasta were steadier, with the ordinary at 11 and the preference stock 55½. United Of Havana 1906 debentures eased to 18½. Canadian Pacific came back to 17.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week		No. of Week	Aggregate traffics to date			Shares or Stock	Prices		
				Total this year	Inc. or dec. compared with 1945/46		Totals		Increase or decrease		Highest 1946	Lowest 1946	Sept. 30, 1947
							1946/7	1945/6					
South & Central America				£	£		£	£					
				+	+		+	+					
	Antofagasta ...	834	21.9.47	38,740	+ 5,970	38	1,568,630	1,232,500	+ 336,130	Ord. Stk.	11	10½	11
	Arg. N.E. ...	753	20.9.47	ps.329,600	+ ps.12,300	12	ps.3,830,800	ps.3,776,000	+ ps.54,800	"	17	5	10
	Bolivar ...	174	Aug., 1947	899,656	+ 81,217	35	8872,836	8860,897	+ 811,939	6 p.c. Deb.	6½	5½	22½
	Brazil ...									Bonds	30	26	41½
	B.A. Pacific ...	2,771	20.9.47	ps.2,600,000	+ ps.425,000	12	ps.29,575,000	ps.25,288,000	+ ps.4,287,000	Ord. Stk.	8½	5½	10
	B.A.G.S. ...	5,080	20.9.47	ps.3,098,000	+ ps.204,000	12	ps.39,586,000	ps.39,056,000	+ ps.530,000	Ord. Stk.	16	10½	16½
	B.A. Western...	1,924	20.9.47	ps.1,475,000	+ ps.262,000	12	ps.16,335,000	ps.14,352,000	+ ps.1,983,000	"	19	9½	21
	Cent. Argentine	3,700	20.9.47	ps.3,373,850	+ ps.200,161	12	ps.38,799,100	ps.37,364,440	+ ps.1,434,660	"	10½	7½	17
	Do. ...									Dld.	6	4½	11½
	Cent. Uruguay ...	970	20.9.47	29,688	+ 9,088	12	376,661	418,265	+ 41,604	Ord. Stk.	8½	3½	21½
	Costa Rica ...	262	Aug., 1947	30,665	+ 1,689	9	63,523	58,650	+ 4,873	Stk.	15	12	10
	Dorada ...	70	Aug., 1947	31,100	+ 4,300	35	243,900	256,775	+ 12,875	1 Mt. Deb.	102½	99½	108
	Entre Rios ...	808	20.9.47	ps.433,700	+ ps.11,200	12	ps.5,249,200	ps.5,067,500	+ ps.181,700	Ord. Stk.	9	5½	10
	G.W. of Brazil ...	1,030	20.9.47	33,300	+ 3,000	38	1,183,600	1,035,500	+ 148,100	Ord. Stk.	26.6	20	3
	Inter. Ctl. Amer.	794	July, 1947	\$1,059,747	+ \$245,025	30	\$7,963,011	\$6,472,238	+ \$1,490,773	"			
	La Guaira ...	22½	Aug., 1947	\$97,074	+ \$25,111	35	\$882,233	\$944,426	+ \$62,193	5 p.c. Deb.	70	58	83½
	Leopoldina ...	1,918	20.9.47	73,895	+ 2,265	38	2,511,726	2,241,725	+ 270,001	Ord. Stk.	5	3½	14½
	Mexican ...	483	31.5.47	ps.1,464,000	+ ps.459,100	22	ps.7,706,200	ps.13,441,600	+ ps.5,735,400	Ord. Stk.	1½	½	1
Midland Uruguay	319	Aug., 1947	16,601	+ 4,384	9	32,448	39,969	+ 7,521	"				
Nitrate ...	382	15.9.47	9,112	+ 3,193	37	164,312	150,701	+ 13,611	Ord. Sh.	83.9	71.3	63.9	
N.W. of Uruguay	113	Aug., 1947	3,791	+ 3,087	9	7,778	11,581	+ 3,805	"				
Paraguay Cent.	274	19.9.47	£94,380	+ £34,015	12	£589,180	£726,075	+ £136,895	Pr.Li.Stk.	78½	60	44½	
Peru Corp. ...	1,059	Aug., 1947	169,493	+ 289	9	332,183	320,684	+ 11,499	Pref.	16½	8½	9½	
Salvador ...	100	July, 1947	c75,000	+ c7,000	4	c75,000	c82,000	+ c7,000	"				
San Paulo ...	153½								Ord. Stk.	119½	52½	152	
Taltal ...	156	Aug., 1947	5,420	+ 2,165	9	11,005	7,050	+ 3,955	Ord. Sh.	22.6	15.3	20	
United of Havana	1,301	6.9.47	57,974	+ 12,420	10	597,603	541,437	+ 56,166	Ord. Stk.	2	1½	2	
Uruguay Northern	73	Aug., 1947	1,111	+ 365	9	16,700	19,939	+ 3,239	"				
Canada													
Canadian National	23,535	Aug., 1947	9,254,750	+ 482,750	34	71,822,500	63,922,500	+ 7,899,750	—				
Canadian Pacific	17,037	14.9.47	1,601,750	+ 47,000	37	54,361,750	50,112,750	+ 4,249,000	Ord. Stk.	25½	16½	17½	
Various													
	Barsi Light ...	202	Aug., 1947	24,247	+ 4,642	22	138,577	129,315	+ 9,262	Ord. Stk.	123½	111	110½
	Beira ...	204	July, 1947	98,525	+ 7,271	41	927,422	767,420	+ 160,002	—			
	Egyptian Delta	607	20.8.47	16,791	+ 887	15	179,814	181,642	+ 1,728	Prf. Sh.	9½	5	6
	Manila ...									B. Deb.	75	60	72½
	Mid. of W. Australia...	277	July, 1947	17,688	+ 3,193	4	17,688	14,495	+ 3,193	Inc. Deb.	85	70	74½
	Nigeria ...	1,900	July, 1947	296,272	+ 73,139	17	1,339,004	1,490,315	+ 151,311	—			
	Rhodesia ...	2,445	July, 1947	579,717	+ 30,734	41	5,558,202	5,149,365	+ 432,837	—			
South African	13,323	23.8.47	1,232,957	+ 143,665	21	25,677,699	22,773,584	+ 2,904,115	—				
Victoria ...	4,774	May, 1947	989,352	+ 361,928	48				—				

† Receipts are calculated @ 1s. 6d. to the rupee